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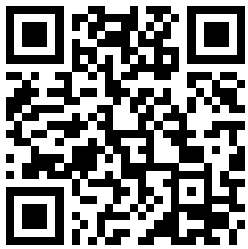

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A MONTHLY MAGAZINE OF
EDUCATIONAL WORK AND PROGRESS

VOL III.

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A Monthly Magazine of Educational Work and Progress.

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REVIEW AND OUTLOOK.

SENTIMENTAL considerations suggest that our first number to appear in the New Century might appropriately be prefaced with a few editorial remarks, in which past performances and future prospects are surveyed—"in contemplative fashion." But though sentiment provides a reasonable excuse for such an introduction to our third volume, the accomplishments of 1900, and the well-grounded hopes for 1901, are themselves sufficient to justify a short statement.

We are able to begin a new-year's work with the gratifying assurance of a growing appreciation on the part of teachers and other educationists, of our efforts to obtain the opinions of experienced specialists on the teaching of subjects comprised in a secondary-school curriculum; and for the opportunity THE SCHOOL WORLD provides of placing on record the results of personal experiences of educational ways and means.

A glance at our correspondence columns should act as a corrective to the pessimist who declares that teachers in secondary schools are indifferent to the necessity for improved methods in teaching, and have limited views as to scholastic responsibility. To name only two or three examples: the animated and valuable discussion upon the heuristic method of teaching science (more especially physics and chemistry) has, we know, been followed with keen interest by some of the most distinguished men of science in the kingdom. The letters on the teaching of spelling show that even in the case of the most elementary subjects there is always something to be learnt from a frank interchange of opinion; and the correspondence on leisure hour pursuits for boys and girls demonstrates that helpful suggestions on less purely pedagogic matters can still be obtained by a friendly comparison of notes on the part of practical teachers.

The recent decision of the Council of the British Association to establish an Educational Section, to meet for the first time at Glasgow in September next, may be taken as an index of the modern growth of interest in methods of instruction; and it is believed this action of the Council of the British Association will have a profound and immediate effect on British education.

It is true that some of the events of the past year have been a little discouraging—leading to the conclusion as they do that the administrators of English education have still to be convinced of the value of training and experience, whether obtained at a special college or by actual work in the class room. Yet, on the other hand, teachers themselves recognise more fully than ever before that there is a science as well as an art of education. And now that the Consultative Committee have really begun to discuss the terms of admission to the Register of Teachers to be prepared immediately, our School Governors may become impressed by an official recognition of the value to be attached to a practical acquaintance with the principles of educational science and the canons of educational art.

During 1901 several series of articles on subjects not hitherto dealt with will be contributed by experienced writers new to our columns and familiar with the needs of the school. For instance, in the early months of the year papers will be published (1) on Recent Researches in Classical Archæology so far as they affect the school teaching of Scripture History, Latin, and Greek; (2) on the Prevention of Infectious Diseases in Schools; (3) on the set books in English Literature in many of the public examinations of the year. The reasonable study of English Literature will be especially encouraged, not only by the publication of original articles, but also by the criticism of examination questions, by essay competitions, and in other ways. We intend, in fact, to spare no trouble to make THE SCHOOL WORLD indispensable to teachers in secondary schools, and we confidently appeal to our readers to assist us by making the magazine known to those of their scholastic friends who are not yet familiar with it.

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COMMON EXAMINATION ERRORS.

II.—ENGLISH HISTORY.

By A. J. EVANS, M.A.

EXAMINERS find that, to a large extent, boys and girls pass or fail in English history by classes rather than by individuals. The obvious conclusion is that results depend not so much on the industry or native powers of the pupils as on the methods adopted by the teachers. Again, it is found that, from the schools which *are* successful in obtaining passes, comparatively few attain to any high degree of success in this subject. The large majority of pupils manage only to escape failure. Often there does not seem to be even an endeavour to do more. An attempt will be made in this article to suggest some of the probable causes of this failure.

So low is the standard for a bare pass in most of our public examinations that a general failure of a class must be due to such neglect of the subject as is due to utter indifference. For such the only remedy is a change of intention—a change which nothing that we can say here will effect, and which can be wrought only by a desire for success new-born out of whatever motives can be brought to bear. We do not suppose we count many such teachers, if any, among our readers. But for those who are desirous of raising their standard of success we make the following suggestion.

Failure to pass or to get honours in history examinations may be attributed, speaking generally, to causes falling under three heads:—

(1) *The Text-book.*—Questions are set by examiners or committees of examiners who survey the period as a whole and prefer to seek for the knowledge which the examinees have gained and assimilated of history as such rather than for their reception of the language of any one book. The consequence is that no one text-book, however good in quantity or quality, will be sufficient. For purposes of economy, both of money and of time, the pupils can probably have no more than one book. But the teacher should not be thus satisfied. Having chosen the best manual to put into the hands of his scholars, he should set no limits to his own reading and note-taking. Before the term's work commences he should have a good working knowledge of the period to be studied, acquired from the widest possible reading, and extending to acquaintance with at least two or three of the best text-books and some of the more important illustrative literature. Otherwise he will find in the paper which his pupils will bring him hereafter questions which required knowledge of matters, often the most elementary, that have never entered into his curriculum. It is true that the subject is wide, and it may often reasonably be argued that it is impossible, in the greatest amount of time allotted, to cover the ground implied by the examination paper. But a nearer approximation between the ideals of examiners and of teachers may be reached if the latter will study the best of recent text-books.

(2) *Methods of Teaching.*—It will not do to begin the course with "setting" the first chapter or first "reign" to be learnt, then the second, and so on till the last, and then begin again. This is to lose the wood in the trees. The first lessons should be devoted to making sure that the pupils have a thorough grip of some of the most important events in the period. Specially should they be made to *know* the names of the kings and the dates of their reigns. Then to this may constantly be added new facts, grouped and re-grouped till ridiculous mistakes in chronology are morally impossible. Examiners generally are not pedantically desirous of absolute accuracy in dates, *where it does not seriously matter*. But surely it *does* matter whether, *e.g.*, "Lambert Simnel" comes before or after 1485, or whether the "Long Parliament" met at the beginning or end of 1640. Dates are useful to fix the order of events in minds that are too youthful to learn that order as one of constant cause and effect. Sometimes examiners find them centuries wrong.

Much should be made of biographies. But here caution is necessary. Who does not know of the answer to "Thomas Becket" questions that tells the famous romance and *ends* with the words, "they married and Thomas was their son"? See that the information given in answer to "Give the life of—" is true, inclusive and *relevant*.

(3) *Use of Periodical Test-papers.*—In the early stages the questions set should not be those expected in the public examination. They should include mere memory questions, such as, "Give a list of: (say) kings, their wives and children, battles with dates, men famous in this reign or period." Specially important at this stage are clear definitions. "What is or was—?" should be a frequent formula. *Assize*, *Salic law*, *code*, *Act of Parliament*, &c., &c., are words to which many an examinee has attached no definite meaning. They can talk *about* the thing, very much about it, but what it *is* they often do not know. When this preliminary work has been completed sets of questions should be made for the class with a view to testing their powers of grouping events topically rather than chronologically. Suppose, for example, that the period under study is that of the first three Edwards. Such questions should be asked as, "What were the relations between England and Scotland during this period?" thus requiring the pupil to remember "Wallace," "Bannockburn" and "Nevil's Cross" in one connection.

Great regard should be paid to order and composition. Pupils should be taught to write good English, to minimise their words while multiplying the information they give, so long as such information is *relevant*. All such test-papers should be strictly time-papers. Pupils cannot too early be taught that they must economise their time, and that if they find they have not finished their papers when the time is up, they have certainly been too prolix over some question or other. Such

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prolixity defeats the candidates' aim in two ways. A busy examiner will often not wade through three sheets when he expected only six lines, and marks will thus be lost for information embedded in "talk," and answers are crowded out which the pupil may have been able to give well. All such papers should be returned to the pupil with their errors of all kinds marked. Some suffer from "trivial" blunders, such as dating events consistently just a century wrong. How is an examiner to know if this is mere slip or want of knowledge? He is bound in fairness to careful candidates to mark the careless lower. Others misspell words even when they are given in the questions. Some give too little, others too much. Each must be treated individually and warned against his peculiar failings.

Public attention has been drawn to a too frequent use of colloquialisms. This often arises from the reproduction of familiar explanation or illustration used by the teacher. Many governmental institutions are difficult of comprehension by the child, and the use of such explanation is not to be deprecated. But when the pupil has thus been led to understand, he should be taught to substitute for the easy, familiar words the correct technical phrase. In this connection a word may be useful as to the use of proper verbs. Treaties are not "passed," but "made." Parliamentary Bills are *passed* and then become *Acts* or statutes. Taxes are *granted*. Hampden was not found guilty, but non-suited. The intelligent teacher will supply for himself other examples.

The elder candidates, at least, and so far as possible even the younger ones, should be taught not to be bullied by the form of the question. Many an answer is spoiled by rushing the words of the question into the first sentence of an answer. *E.g.*, "What were the causes of the Civil War?" Answer: "The causes of the Civil War were—" This can, to a large extent, be avoided by training the pupils to pause a little before writing their answers. Tell them they need be in no hurry to answer lest the teacher point to the "next boy." There should be a great difference between answers to questions "round the class" and in a written examination. To sum up: the parting words of a teacher before sending pupils into a history examination should be: "Understand clearly what the examiner expects you to give as an answer to each question, specially if it is a double one. Be relevant, be concise, but not too concise. Minimise mere words, but give as many thoughts as belong to the subject. Spell carefully. When wanting a date don't try to recall figures, but order of events. Think a sentence out before you write it down. In a long answer make paragraphs."

THE student who is to enter the higher region of thought which the philosophy of history occupies must first have obtained a substratum of dates and facts; must have had presented to him a *carte du pays*, by means of which he may assign its right place to any new information he may be able to obtain.—Sir Joshua Fitch.

SHAKESPEARE'S "HENRY V."

By J. A. NICKLIN, B.A.
Late Scholar of St. John's College, Cambridge.

"HENRY V." has to be considered by the literary student (1) as an apotheosis of the fortune and the spirit of England; (2) as a continuation of "Henry IV." I put the patriotic theme first, because it is by its representation of a united England, gathering itself up after the exhaustion of furious intestine strife to a triumphant display of force in the eyes of the world, that the later play resumes and completes the earlier plays. The serious, historical matter of the two parts of "Henry IV." finds its complement and explanation in "Henry V." There is no need to dwell long on the relations of the play to Shakespeare's own time and political beliefs. It is probable that in the later scenes the poet uttered the warm pleas for a close union between England and France under the influence of sympathy with Essex's Spanish policy—a policy of spirited aggression which would necessarily depend for its success on the friendship of France. His predilection for Essex is hinted at in the prologue to Act V., where he prophesies the earl's triumphant return from Ireland, "bringing rebellion broached on his sword." Undoubtedly the strong national feeling of the previous acts was an expression, under dramatic limitations, of English feelings towards Spain, and the exultation over the miraculous and unforeseen victory of Agincourt was a reflex of the exultation of all Englishmen at the miraculous overthrow of the Armada. And probably King Henry's vision of a boy, half French, half English, who will go to Constantinople and take the Turk by the beard, is a prophetic anticipation of English triumphs and English expansion. May it not be that Shakespeare's thought was glancing off to a king, part Scotch, part English, who at this period might not unreasonably be expected to inherit and fulfil Elizabeth's ambitions? Without wishing to insist on a very dubious point, I may notice that Shakespeare has introduced a Scots captain into the international confederacy of English, Welsh and Irish before the walls of Harfleur.

The play, as I have said, is an apotheosis of the English fortune and the English spirit. It is a companion piece to the "Persae" of Aeschylus, and as that represents directly the Athenian triumph over the Persians at Salamis, so this represents, though by mere suggestion and unexpressed parallel, the English triumph over the Armada. The essence of drama is missing; the gradual development of character or its transformation under unusual circumstances. It is mainly concerned with simple action, and the drama being unsuitable for the display of mere action, the somewhat inartistic device of descriptive prologues before the acts has been hit upon. It should be noticed that some of the finest passages occur in these prologues—Henry's voyage to France, the

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English camp on the night before the battle, Henry's triumphant return,—and that Henry's great speech to his army might have had place in an epic as naturally as in a play.

Still, there is a display of character, though not of development of character: the British simplicity and force which obtained their apotheosis at Agincourt. Shakespeare's characterisation in this play is wholly concerned with explaining the qualities which made the English army victorious in the face of every obstacle, and the French army experience the very dregs of humiliation in spite of every advantage. The king, the incarnation of manly simplicity and steadfast energy, nobles like York, Exeter and Westmoreland forgetting their self-assertion and all the unhappy feuds of old time in the patriotic fervour which Henry knew so well how to inspire, the honest purpose and professional enthusiasm of Fluellen, the shrewd, prosaic valour of Williams and Bates, are set into the sharpest relief by the fantastic, impracticable extravagances of the French chivalry. There are no Frenchmen of the lower orders in the play, because Shakespeare understood that the French feudal system allowed no room for such a yeomanry as had decided the fate of Creçy and Poitiers. The scene of hot-headed *insouciance* in the French camp is a fine piece of historic insight. It not only explains the failure of the French army at Creçy, Poitiers and Agincourt, but it gives a prophetic representation of the spirit which delivered the cavaliers as a prey to the New Model of Cromwell. It should be remarked that Shakespeare has given the last touch to his picture of the disorganisation of the French and the contagious spirit of victory among the English by making a French gentleman of undoubted courage, Monsieur le Fer, surrender to the cowardly and low-born Pistol.

The character of the King can only be fully apprehended when we regard it as the close and completion of the career of Prince Hal. As Professor Moore-Smith has pointed out, "So long as Henry had been merely Prince of Wales, he had had none of the responsibility of government. Born with a healthy, genial nature and an honest love of truth and reality, he could "not be content to pass the May morn of his youth in the close atmosphere of statecraft and dissimulation; he must go out from his father's court, mix with all conditions of men, see things from all sides, and while seeming only to laugh, feel within himself that he was learning to understand (among other things learning to understand the worthlessness of his associates)." Through all the riot of the comic scenes of Henry IV., Prince Hal had kept before himself a certain ideal, a certain standard. It might not be a high standard—it was the standard of irreflective honour of a man of action,—but at least he was always faithful to it. He was willing to be misconceived by others, but he would not for anything deviate from his own conception of his part. "Who! I rob? I a thief? Not I, by my faith!" he exclaims; and when he has consented to take part in a wild escapade, he explains, in a soliloquy, his own interior assurance—

> I'll so offend to make offence a skill,
> Redeeming time when men least think I will.

His companions were cruelly mistaken in thinking that they possessed any influence over him. He understood them no more than they understood him. He scarcely appreciated Falstaff's inexhaustible wit; it was the freedom, unconventionality and carelessness of appearance that attracted him; when the call came to responsibility and authority, he could brush aside his old associations without a regret. In his self-examination, as he prepares to leave the decision of his cause to the God of Battles, he remembers his father's sin of usurpation, but he feels no remorse for his own past; it had the approval of his own conscience. In the scene in the Presence Chamber, where the question of his succession to the French Crown is debated, Henry shows himself scrupulous in examination of his legal right, but ready to act on the mere proof of legality. It never occurs to him, as it would to a deeper thinker, that those miseries of war, which he himself so faithfully paints, need a much more cogent justification than mere legality of claim. Nor does it ever enter his mind to enquire whether he can lawfully sit upon the throne which his father gained by unlawful insurrection. The same calm assurance in external objective right shows itself in his threat to Harfleur, disclaiming all responsibility for the outrages which would ensue on its being taken by storm, and in his rejoinder to the soldiers' plea that the King must answer for all the souls of the English who fell at Agincourt. This absence of self-questioning, and firm conviction in the righteousness of any position that he has deliberately taken up, renders him confident in the greatest dangers, prudent and foreseeing in his measures, as in his insistence on provision against Scotch invasion, before attempting aggression in France—(this because he looks always for an external justification of his conduct, which will be especially evidenced in reasonableness and success, and because he is not distracted by those moral questionings which interfere with decided action)—and prompt to take stern measures if they should appear necessary, as in his order to kill all the prisoners.

It must not be thought that Shakespeare wished to mark the limitations of Henry invidiously. Rather, he was himself too near akin to a Hamlet not to overprize a little the decision and directness of a Henry. In some respects he has made Laërtes show up the disadvantage of Hamlet. Henry is altogether superior to Laërtes; he is differentiated by single-heartedness in aim, magnificence in scope, grandeur in conduct. In Henry Shakespeare has alike personified the militant spirit of England and drawn the ideal man of action.

Most of the characters in the play are drawn with the same intention as Henry; it is to "show the mettle of their pasture," to make us understand the nature of the men who "stuck all together" at Agincourt. Of the yeomen, Bates and Williams, it is not necessary to speak much. They should

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be marked in every word they say, for here is a shrewd piece of national appreciation by the best qualified of all Englishmen. Bates is of a fine bull-dog courage and devotion. Though he admits "we have no great cause to desire the approach of day," he stoutly maintains, as regards the responsibility of the King, "I do not desire he should answer for me; and yet I determine to fight lustily for him." Williams uses the prerogative of the average Englishman to grumble. The King had said he would not be ransomed "to make us fight cheerfully; but when our throats are cut he may be ransomed, and we ne'er the wiser." He has thought seriously of his situation. "I am afeard there are few die well that die in a battle; for how can they charitably dispose of anything when blood is their argument?" But he readily yields up his opinion to what appears to him sound reasoning. After the disguised king's remonstrance he concedes, "'Tis certain, every man that dies ill, the ill is upon his own head, the king is not to answer it." Fluellen's character, apart from the humours of it, finds its key notes in a couple of sayings: "It is the greatest admiration in the universal world, when the true and aunchient prerogatifes and laws of the wars is not kept," and, "I need not be ashamed of your Majesty, praised be God, so long as your Majesty is an honest man." Pistol and Nym and Bardolph, for the main purpose of the play, represent the evil scum which is inevitably to be found in every army, and serve to bring out the stern justice and discipline of the King.

The trio of Falstaff's followers, however, are not only to be regarded as typical specimens of the army which invaded France, they must also be considered as seriously typical of the peculiar society in which the young prince had moved, and as Shakespeare's caricatures of contemporary manners. Pistol is an example of the hangers-on of the *Rose*, the *Swan*, and the *Curtain*, who snapped up the bombast of extravagant tragedies; Nym is a type of the swaggering tavern haunters, who thought to grace their conversation with the inanities of current slang. Shakespeare had announced his intention, in the epilogue to Part II. of "Henry IV.," of making the comic interest of Henry V. centre round Falstaff. Fortunately, he afterwards saw that it would be cruel to expect the old man to make mirth any more. The result was the wonderful pathos of Falstaff's death, told by a coarse, ignorant, disreputable, but still womanly woman. Dame Quickly—one of the most wonderful of Shakespeare's creations in low life — is full of Christian charity. She makes no doubt that the old knight is in "Arthur's bosom." She resents the suggestion that he "cried out on women," and when overborne by testimony, explains that his expressions were "rheumatic," and only applied to the Babylonian woman. That Shakespeare holds Henry entirely right in the conduct which killed Falstaff's heart only makes the pathos more sincere. Probably it is with genuine intention that Shakespeare leaves Pistol alone surviving—Pistol, the least deserving of all that unsavoury company. Bardolph, for whom we feel a sympathy begotten of that thought of his master, "Would I were with him, wheresome'er he is, either in heaven or hell;" Nym, who at least had ten times more valour than Pistol; were hung: the Boy, a lively, likeable young rascal, had his throat cut with the rest of the lackeys: Hostess Quickly, blundering, kindly, disreputable Quickly, dies in hospital. Only Pistol survives. It may be noted, in passing, that Shakespeare has called for our interest in the Boy, and shown him going lightly and unsuspecting to his fate, to make us understand the sudden fury which prompted the murder of all the French prisoners.

There are still two scenes which call for comment — the conspiracy scene and Henry's wooing. The dangerous plot against the King's life, on the eve of so perilous an enterprise, heightens our interest in him, especially when we see his magnanimity in pardoning the man who had railed on him, and find him, in his execution of the conspirators, simply retorting their own cruel counsel upon themselves. Henry V. crushes conspiracy so that it never revives, because he acted openly, honourably, and with a high hand. His father found conspiracy a many-headed hydra, which could never be slain, because his courses were subtle, secret and deceitful. In the wooing scene the King, as Dr. Johnson has observed, has "neither the vivacity of Hal nor the grandeur of Henry." But Shakespeare chose the lower tone with full deliberation. "To have heightened the tone and made Henry a Romeo, or, on the other hand, to have made the scene wildly mirthful, and the king a Hal, would have been to distract the attention of the audience from the main interest of the play, and confuse the simple lines of Henry's character. The view of Henry which the poet wished to leave with them was that of the soldier-king. It was not to be confounded with any other presentation of him rivalling this in interest."

The conclusion of the piece, as I have said, may be taken as prophetic rather than historical. Was it mere coincidence that Shakespeare put the prayer for union between the two kingdoms, so soon falsified by events, in the mouth of the hateful Isabeau of Bavaria?

There are, of course, many excellent editions of the play. Professor Moore-Smith's, in the Warwick Series, has a valuable literary as well as grammatical and historical commentary. The main points of the story and characterisation are well brought out in Mr. Quiller-Couch's "Historical Tales from Shakespeare." But the best commentary on a play is the stage. No one who has the opportunity should miss to see Mr. Benson's representation.

ONE hearty laugh together will bring enemies into closer communion of heart than hours spent on both sides in inward wrestling with the mental demon of uncharitable feeling. To wrestle with a bad feeling only pins our attention on it, and keeps it still fastened in the mind: whereas, if we act as if from some better feeling, the old bad feeling soon folds its tent like an Arab and silently steals away.—William James.

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PREVENTION OF INFECTIOUS DISEASE IN SCHOOLS.

By C E. BADDELEY, M.D.(Lond.)

I.

BY bringing together a number of young and susceptible individuals within a more or less confined space, schools afford a fertile field for the spread of various forms of disease, especially those which are popularly known as infectious in character.

As education is by law compulsory in this country, the great majority of children have to attend school in some form, and a moral obligation is thus thrown upon school managers, as far as may lie in their power, to safeguard the health of the children attending their school. This applies especially to *communicable* or *infectious* disease, since, should a child contract a disease of this nature at school, it not infrequently happens that it communicates the disease to the other members of the family, thus entailing much expense and hardship on the parents.

The Public Elementary Schools are under the supervision of the Board of Education, which to a certain extent prescribes to the Board of Management the construction, sanitary arrangements, and other details for each school, as well as the maximum number of scholars to be accommodated, curriculum, times of attendance, &c. Private schools are under no such supervision, but this in no way lessens the responsibility of the proprietors.

The object of these articles is not to describe large and elaborate sanitary and hygienic constructural details, which, however important to the health of the school population, are quite out of reach of many school managers, but rather to indicate some comparatively simple precautions which, if intelligently used, are of the utmost value in preventing the spread of these diseases. To make full use of these precautions a clear understanding of the essential nature of the various infectious diseases and their modes of propagation is necessary. Even in the most perfectly constructed and carefully managed school, there is the constant risk of cases of infectious disease being introduced, the more so when, as is generally the case, a proportion of the scholars attend daily; and the prompt recognition of such a case, and its removal from the school, is the only way of preventing the spread of the disease.

Definite recognition of the nature of the disease in its early stage is often exceedingly difficult even for an expert, but there are many obvious symptoms which are sufficiently suspicious to justify a schoolmaster, who desires to keep his school free from disease, in excluding a scholar exhibiting any of them from school until a definite diagnosis of the nature of the case can be made.

INFECTIOUS DISEASE.

By the term "infectious disease" is meant every abnormal condition of an individual which is capable of being reproduced with similar symptoms in another susceptible individual by association or other means. This definition will include the diseases popularly known as "contagious," and also a number of other conditions which until recently have not generally been regarded as infectious, such as consumption and pneumonia. The communication of these diseases seems to demand the transference of some material particle from the diseased to the healthy, and in many this is known to be the case, but in others so subtle is the nature of the *infective particle* that its detection has not been yet effected; but even in these there is good reason to believe that this want of knowledge is due rather to our defective powers of observation than to the absence of an infectious particle. It is only within comparatively recent years that the infective organisms, which are now known to be the cause of a number of different diseases, have been discovered, yet so successful has been the study of *bacteriology* that already a great deal is known of their life history, and it is only reasonable to suppose that this knowledge will rapidly extend.

The value of this knowledge of the life history of infective organisms, from the point of view of prevention of the spread of disease, is very great. The specific nature of the diseases themselves has been long recognised, and now the specific characters of the organisms which are the cause of disease are becoming recognisable, and the peculiarities of the life history of a specific pathogenic organism are often found to explain peculiarities in the propagation and incidence of the specific disease which it causes, which were formerly shrouded in mystery. Although it may not be strictly capable of proof, it may be permissible to assume that for each specific disease there is a specific infective organism. As to the origin of these infective organisms it would be unprofitable to speculate here; it is sufficient to state that most of the evidence points to their being derived from antecedent cases of specific disease, and that there is very little of their being derived from organisms hitherto innocuous. Infectious disease, therefore, depending upon the introduction of an infective organism from without, is theoretically *preventable*.

INFECTIVE ORGANISMS.

Many of the organisms which are known to be the cause of disease belong to the great family Fission Fungi, or bacteria. This family belongs to the vegetable kingdom, and its members are the lowest form of organised life known to science. Bacteria are all minute unicellular bodies, consisting of a minute particle of the substance known as *protoplasm*, and containing within a smaller condensed part called the *nucleus*. They are so

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minute that very many thousands can be conveyed on the point of an ordinary needle, and their structure and mode of life can only be studied under the highest powers of the microscope; but so successful have recent researches been that many hundreds of distinct species are known. They are of various sizes and shapes, but each species maintains its general characteristics through a large number of generations. They all multiply by division; that is to say, that the cell which constitutes an individual becomes constricted and divides into two parts, each of which eventually presents the special characteristics of the original cell. Many of them also reproduce their species by means of spores. In certain circumstances the contents, or part of the contents, of one of the cells become altered in character, perhaps surrounded by a special envelope. The parent cell perishes but the spore remains, and in favourable circumstances casts off its envelope, and becomes a cell like its parent. The practical importance of this mode of reproduction is that the spore is much more tenacious of life than the original bacterium. Each of these organisms is possessed of the characteristic function of life, that it is able to select from its surroundings certain elements, and assimilate them to its own substance and use. They can thus only maintain their vitality and reproduce their species under certain conditions of *temperature*, *moisture*, and *food supply*. These conditions are so important to a proper understanding of their propagation and diffusion that it is necessary to set them down in some detail.

All bacteria require for their growth moisture, certain chemical substances as foods, and a certain degree of heat (from 15° to 60° C.). Some require air, some will grow with or without it, and some will only grow when air is excluded. All bacteria are killed in a liquid medium by a temperature of boiling water, and also by certain chemical substances which are called *antiseptics* or *germicides*. Sunlight destroys certain species of bacteria. In a dry state bacteria do not seem to be able to maintain their vitality for long, except in the form of spores. Spores also possess greater power than bacteria of resisting both heat and germicides. At low temperatures bacteria do not multiply, but even very great cold does not destroy their vitality.

In the process of their growth bacteria produce certain chemical changes in the medium in which they live. Bacteria which produce disease live and multiply in the fluids of the body of the individual they affect, and are called *parasitic*. They produce in the individual the chemical products of their growth. Some of these products are of a highly poisonous nature, and are called *toxins*. These toxins are absorbed into the blood of the individual affected, and produce the symptoms of the special disease with which the organism producing them is associated. Some of these parasitic bacteria can also live and multiply outside the animal body, in decomposing animal or vegetable matter. They are then said to have a *saprophytic* as well as a parasitic existence. When an individual is invaded by parasitic bacteria some escape from the body with the various excretions, and are so disseminated.

These bacteria, upon being introduced in an appropriate manner into the body of another susceptible individual, are capable of producing the symptoms of the special disease with which they are associated. By no means all bacteria are disease producing or pathogenic. Many, indeed, perform important and beneficent parts in the economy of nature. Bacteria are so minute in size that they may be transported some distance through the atmosphere with moisture or dust. Nevertheless, like all other material particles, they are subject to the force of gravity and other physical laws, and by appropriate means their access to a particular spot can be prevented. By such measures their access to surgical wounds is prevented, and the success of modern antiseptic surgery promises more than a possibility of the exclusion of the specific organisms of infectious disease from the human body.

The conditions under which a specific organism is said to be proved to be the cause of a specific disease are four, called *Koch's postulates*:—

That the organism shall always be found associated with the disease.

That the organism shall be cultivated in a medium outside the body.

That the organism from such a cultivation introduced into an individual shall reproduce the disease.

That the specific organism shall be recoverable from the individual so affected.

Organisms belonging to the family of Bacteria are known to be the cause of diphtheria, plague, influenza, typhoid fever, cholera, erysipelas, and blood poisoning or septicæmia, pneumonia, and consumption (tuberculosis), as well as several other less common diseases. Although the organisms have as yet not been definitely identified, there is much evidence that bacteria also cause scarlet fever and German measles, and various forms of tonsilitis, and inflamed sore throat, measles, whooping cough, mumps, typhus fever, and epidemic meningitis.

Organisms of this class also play an important part in all localised and inflammatory diseases with suppuration, such as ophthalmia, cold in the head, suppuration in the ear, boils, and pustules, &c. The organisms which cause chicken pox, small pox, and the vaccination pustule have not yet been identified. Some few diseases, of which the most important is ringworm, are caused by organisms belonging to the true fungi. Itch is caused by an animal parasite, the *Acarus scabiei*, which burrows in the skin of the affected individual. Thus it will be seen that almost all the more common infectious diseases of school life may be ascribed to infective organisms of bacterial nature.

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ON THE TEACHING OF ENGLISH IN A SWEDISH SCHOOL.

By DANIEL ELFSTRAND, Phil.Cand.,
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IT is more than eleven years since I made my first attempt at teaching English on the principles laid down by modern reformers represented by the Scandinavian Society "Quousque Tandem" and "l'Association Phonétique Internationale." I set to work with a strong belief in the soundness of those principles, and, let it be said at once, my eleven years' experiences have thoroughly confirmed that belief.

It seems in these days, with their lively interest and great activity in the development of modern language teaching, that the results of individual efforts in applying principles for and against which so much has been said and written may be of some interest to teachers whose own language is concerned. So, acting upon an English friend's suggestion, I have taken the bold step of laying before English colleagues a short account of my personal experiences and conclusions.

For a better appreciation of my work it will be well to premise a few remarks by way of introduction.

My experiences are for the most part drawn from the Municipal School of Gefle, a commercial and technical establishment based on a completed elementary school course.

The average age of beginners is about 13 years. The school is divided into four forms, each supposed to require one year in ordinary circumstances. The school year comprises 35 weeks for the two lower forms, 31 for the two upper ones. Among the subjects taught, English holds a prominent place, being the chief foreign language, with a weekly allowance of 8 hours in the first form, 7 in the second, 4 in each of the third and fourth forms.

This seems a large amount of time, but considering the scantiness of previous linguistic training in the mother tongue—the only language taught in our elementary schools—a smaller allowance would be altogether insufficient; and it will not be surprising to learn that a not inconsiderable portion of the time, in the first class at any rate, has to be devoted to general grammatical training.

My first two years' experience was gained in the public school of the place, where three years' thorough preliminary training in Swedish and German constitutes a very different sort of foundation for the study of English, which begins in the fourth school year on the modern side.

It may perhaps also be worth mentioning that my efforts throughout have been absolutely untrammelled either by school codes, or examinations, or by personal interferences of any kind. On the contrary, at the public school I received much support from my senior in the subject, and I cannot call the regulation laid down in the Public School Code—"Class IV. Practice in pronunciation and reading; accidence in connection with extempore translation from Swedish and English; vocables"—a serious obstacle to the master's freedom, at least it was never held up to me as a warning. Besides, with two-thirds of the official rule I was in perfect sympathy, and it was not difficult to come to an arrangement about the remaining third.[1]

PHONETIC TRAINING.—PRONUNCIATION.

When I began teaching modern languages in school, it was something like an axiom taught me by conclusive experience, not always of a cheering kind, that the only rational and effective method of approaching the study of a modern foreign language lay through a preliminary training in phonetics, theoretical and practical; and, if subsequent practical tests have had any modifying influence on that view, it has certainly been in the direction of confirming it. It was therefore very gratifying to be associated with a headmaster and a senior modern-language master who, far from showing a hostile front to the "phonetic movement," from the very first willingly granted me *carte blanche* to found my teaching on a phonetic basis.

Thus my starting-point always was, and still is, the *sound*, the paramount importance of which, as the physical condition of speech, I try to make very clear to my pupils, and this point of view is ever afterwards kept steadily in the foreground, in order to prevent relapses into the "belief in the letter," a belief that is certainly more injurious to modern language teaching than most teachers have yet realised. Accordingly, the very first hour is devoted to a practical examination and analysis of some of the sounds of the vernacular, which naturally leads me to a short description of the organs of speech and their most important functions, aided by diagrams and an artificial larynx. The fundamental difference between voiced and voiceless consonants is thoroughly demonstrated and brought home to the pupils by constant practice in producing the voiced—and, *vice versa*, voiceless—representatives of those consonants which lack them in the vernacular.

After taking our bearings in this way, we approach the foreign sounds one by one, slowly and systematically, and always with the help of a phonetic notation—that of Dr. Henry Sweet, slightly modified to meet Swedish needs.

It has been found convenient to start with the "front vowels," exemplified by such series as *big, beg, bag; bid, bed, bad*, as being the easiest for Swedish children; and from this starting point we work our way gradually through all intermediate steps to the opposite pole, the "back vowels." The examples are, with very few exceptions, taken from the simple texts that form the essential material for the next step to be taken in our methodical advance. After the vowels have been gone through, the consonants are approached, the explosives being taken first.

This method of teaching the sounds one by one, embodied in isolated words as examples, has

[1] A few years later the rule was considerably modified to meet modern views.

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proved so fruitful of results that I unhesitatingly prefer it to starting with whole groups of words or sentences. Through the former a more intense concentration on each separate sound is rendered possible, the pupil's mind is not bewildered by the difficult task of grappling with a whole set of foreign sounds, and a suitable transition to the reading or uttering of connected specimens of language is thus established.

After a considerable amount of practice of the kind described has been got through, we pass on to the phonetic texts, to which a period of nine or ten weeks, representing some seventy or eighty hours, is given. This allowance has, on the whole, been found sufficient to lay the foundation of what, according to English judges, may be called a good pronunciation. To attain this end the power of imitation must of course be made the most of, and hence the training of the pupil's ear must be an important part of the teacher's task. From the first, therefore, what is to be read by the pupils is first read by me, not once, but over and over again, if this is needed.

Yet it is a fact that in many cases imitation alone does not suffice, and then no better means can be devised than the application of what phonetics has taught about the organic formation of sounds. A colleague of mine, with some twenty years' longer experience, having of late years given the phonetic method a fair trial, frankly declares: "With the old method I succeeded in arriving at a good result with only a few gifted pupils, whereas now, with the phonetic method, the same result is attainable with all." And for my part, I do not hesitate to say that with the help of the modern science of phonetics a practical as well as theoretical command of difficult sounds, which in former days defied years of strenuous efforts on the part of both teachers and learners, can be brought about in a few hours. But perhaps there is no more convincing proof of the value of phonetics than that which may be gained by testing it in teaching a foreigner one's own language.

To return to my class-work—after a piece of text has been thoroughly worked through, writing from dictation on the blackboard comes in as a final test of the pupils' capacity of distinguishing the foreign sounds and of handling the phonetic symbols.

As regards the much talked-of difficulty of transition from phonetic to ordinary spelling and the risk the latter is supposed to run of being hopelessly spoilt, my experience does not bear out these fears. The same texts that the children are already quite familiar with in their phonetic form are now presented to them in their traditional costume, piece after piece; they read them without any difficulty because they know them almost by heart, and they have to prepare so-and-so many lines at home for the special purpose of writing them from dictation in the class. For some time onwards we concentrate our attention chiefly on the spelling. The task now set before the children of inferring from the sound to its representation is considerably simplified, the necessary phonetic training having been completed, and the worst effect of cross-association being thus avoided.

The question whether the phonetic method necessarily involves the use of a phonetic transcription can, as far as English is concerned, according to my experience, only be answered in the affirmative. When the relation between sound and symbol has been so utterly destroyed, as is the case in modern English, it follows as a matter of course that the orthography can have no other effect on the beginner than that of multiplying the difficulties in his way and encumbering his progress, thus frustrating the object of a reasonable orthography.

In concluding this part of my paper, I cannot help adding that at the present day I even find it hard to realise how so many teachers have come to neglect and look down upon a practical mastery of speech sounds, the actual bearers of the means of communication they are concerned with. In all likelihood, however, this strange phenomenon is to be explained as one of the results of centuries of dealing with dead languages exclusively, where the sound counts for nothing or next to nothing, a view which must of necessity prove fatal to *modern* language-teaching. The advocates of the *à outrance* training-of-the-mind theory within the linguistic department have apparently overlooked the fact that a training which leaves out of view one of the essential characteristics of its medium is, *eo ipso*, doomed to, at any rate partial, failure.

Nor can I explain the so often-heard arguments against "phonetics in schools" otherwise than as the outcome of ignorance. It is not true that what is needed of phonetics is harder than most other school subjects. It is not true that it is abstract. It is, on the contrary, as concrete as any other subject, or even more so, it being the simplest thing in the world, in many instances, to illustrate its teachings in the most palpable way with the help of the organs of speech themselves, which is indeed often just as easy as it would be to make anyone call forth the right note from a piano simply by saying, "Put your finger on this key and press it down." I cannot for a minute take into account the opinion of those who argue that, because there are hard and dark points in this science, as in all others for that matter, it is unsuitable as a school subject; for if that principle were strictly upheld, how many, and what, subjects would be deemed suitable for schools? Or ought not even the simplest elements of what we impart in school to repose ultimately on a scientific basis?

But it may seem out of place for a foreigner to try to demonstrate the value of phonetics to a public who have among them a phonetician of the unique rank of Dr. Henry Sweet, whose works on general phonetics, and more especially on English phonetics, have rendered the student of English invaluable services, and made English one of the most fruitful and gratifying branches of pure philological study.

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THE EFFECT OF THE WAR ON SOUTH AFRICAN EDUCATION.

NOW that the war in South Africa is to all intents and purposes over, and that with the passing of the martial passion we are better able to consider things on their merits, it should prove interesting and instructive to pass in review some of the effects of the war on the general life of the inhabitants of Cape Colony and Natal. It is impossible to estimate even approximately the loss of human energy which war entails, but a little thought will reveal how widespread and potent must be its damaging effect on all kinds of industry. In many directions no sort of statistical information is available, and the general public will never realise what war has meant to ordinary men—traders and artisans—in the affected areas. But, thanks to the Department of Public Instruction, and especially to the Superintendent-General of Education for Cape Colony, Dr. Thomas Muir, whose report for 1900 is before us as we write, it is easily possible to make clear how much the education of British South Africa has suffered as a direct consequence of the war. Dr. Muir adds to his report to the Colonial Secretary a postscript, which deals entirely with the effect of the war on education in his district, and it is to this appendix we are indebted for the following particulars.

But before proceeding to a detailed inquiry it will prevent misapprehension to point out at once that, from the nature of the country and the circumstances of the war, it was only the districts bordering the Orange River Colony and the Transvaal that were vitally concerned in the question under discussion. While the effects of the war in these school circuits was very great, those in other parts of the large expanse of country, which Cape Colony and Natal include, are quite inconsiderable. There has been little more reason why the schools of the country in the south towards Capetown should be affected than those of our own land—except to a slight degree those schools which, farther north, were near the railway and dependent upon the outlying districts for their supply of children, and the attendance of which was naturally greatly influenced by the dislocation of the railway services. The conclusions arrived at in Dr. Muir's report must therefore be considered as entirely caused by the experiences of schools in the comparatively narrow areas adjoining the enemy's country. If these small districts have affected the total number of schools and the total school attendance of the Colony to the extent which the report shows, it is sufficiently clear how much the education of countries in which hostile armies are engaged is affected.

It appears that statistics are sent in from the various schools throughout the Colony to the Education Office at Capetown four times a year, viz., at the end of March, of June, of September, and of December. The date of the outbreak of war will be sufficiently fresh in the minds of our readers to make it clear that the statistics for the third quarter of 1899 would just about have been received at headquarters when war began. In fact, these statistics were complete enough to provide the customary supplement to the *Government Gazette*, which appeared as usual in the middle of November, 1899. This issue of the *Gazette* consequently gives precise information as to the number of children under instruction immediately before the war.

The summary of the quarter's statistics contained in this November *Gazette* shows that at the commencement of the war there were 2,674 schools at work, and that 4,505 adult teachers were engaged in teaching therein. The number of scholars on the rolls of these schools was 147,424, of whom 114,842 were in average attendance.

Judged from the point of view of the Education Office, what were the first effects of the war? We cannot do better than quote Dr. Muir. "The first indications of change came from the districts adjacent to the western frontier of the Transvaal, and probably the first school known to the Office to be closed was one on the very border, the teacher of which, having early information of invasion, locked his school door and went for safety into the land of the enemy. The railway and telegraph lines were, however, soon cut further south, and large groups of schools were isolated in a moment. One inspector ceased suddenly to send in reports, and it was ascertained some time later that he was shut up in Kimberley. Then the north-eastern frontier became affected in the same way. The December examinations were approaching, and the usual preliminary arrangements with the candidates should have been progressing; but letters and parcels of needlework failed to turn up, and one examination centre after another dropped out of reach. Another inspector, who had stuck doggedly to his work amid excitement and disturbance, ceased to be a correspondent, and was found to be detained in Burghersdorp. A third might have been in Colesberg, but at the time the inspectorship there was vacant."

But it was not until the returns for the last quarter of 1899 were eventually received that the full extent of the decrease in the number of children under instruction, the number of schools closed, and the number of teachers disengaged were fully recognised. The completion of the statistics for the fourth quarter of 1899 showed that two hundred and fifteen schools had, for one cause or another, been closed. Here is the list:

Divison.	Number of schools closed.
Mafeking	11
Vryburg	14
Barkly West	19
Kimberley	35
Hay	6
Herbert	7
Colesberg	14
Albert	37
Aliwal North	29
Barkly East	21
Wodehouse	22
Total ..	215

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These numbers, Dr. Muir points out, are, except in the case of Albert and Wodehouse, practically the numbers of *all* the schools in these divisions. But since the publication of the statistics it has been found that a few, perhaps ten, of the total number of schools tabulated were really at work almost to the end of December, and that some of the ten were carried on in very trying circumstances, and much to the credit of the teachers concerned — especially the women. So speaks the official document. If we try to imagine, however, the actual state of things during these troublous times, we shall have little difficulty in picturing to ourselves many a deed of heroism in the face of conditions which, in the case of stay-at-home people like most schoolmasters and schoolmistresses in this country, would have been far more than sufficient to lead to the conclusion that education was under such conditions quite an impossibility.

Even to the unimaginative reader these numbers of closed schools cannot fail to graphically indicate how vitally the teachers of South Africa were affected by the outbreak of war; but, when the statistics showing the numbers of the children turned out of school by the progress of the events of the campaign are studied, the impression one receives grows in vividness to a degree which is well nigh painful. On the 30th of September, as has been already stated, the average attendance of children at school was 114,842; at the end of the second quarter of the next year, 1900, it had decreased to 110,483; that is to say, some 4,359 children were no longer at school. The missing children were divided among the different school divisions in the following proportions:—

Division.	Scholars missing.
Maleking ...	435
Vryburg ...	161
Gordonia ...	186
Barkly West	458
Kimberley	969
Herbert ...	173
Hay ...	128
Kenhardt ...	86
Colesberg ...	315
Albert ...	707
Aliwal North	460
Barkly East	292
Wodehouse	360
Total ...	4,730

But already something has been done to remedy these ill effects. Inspectors and teachers have both been busily engaged ever since relief came to the affected districts. The schools of Burghersdorp were perhaps the first to get to work again, a result largely due to the extraordinary energy of the Inspector for the district. The greater difficulties experienced by the British seem to have delayed the work of resuscitation in the Kimberley circuit. Taking the colony as a whole, by the end of the first quarter of 1900 forty-four of the closed schools had been reopened, and by the end of the second quarter, fifty more. There were consequently some hundred and twenty-one schools still to be dealt with on June 30th, 1900. But during these six months sixty additional new schools had been opened elsewhere, so that there were actually only sixty-one schools less on June 30th, 1900, than on the same date of the previous year.

Dr. Muir gives it as his opinion that very probably the third quarter of 1900 added the sixty-one schools to the list of working schools. These, the report explains, would be either new schools or some of the old ones reopened. In any case the net result comes to this—that the number of schools on September 30th, in the two years 1899 and 1900, was as nearly as possible the same.

The careless reader will probably ejaculate at this stage, "Then why make remarks about the ill effects of the war, if at the end of a year the number of schools in working order had experienced no diminution?" Such an exclamation is only possible to those who leave out of consideration the normal rate of growth—growth educational, that is—of a colony like the Cape of Good Hope.

To take the question of the number of schools first. During the year preceding that in which the war broke out, from October 1st, 1898, to September 30th, 1899, the increase in the number of schools in British South Africa reached one hundred and thirty-two, and this number was, Dr. Muir reports, smaller than that of the school year 1897-98. In view of these facts, the importance of the stationary number of schools on September 30th, 1900, assumes a different complexion entirely. The number of schools, instead of showing the normal rate of increase, remains stationary. That is to say, as a result of the war, there are at the present time something like one hundred and fifty schools fewer in the colony than there should be, even supposing, though there seems no reason for doing so, that the normal annual rate of increase had not been maintained. The same results, though more pronounced, are shown when one examines the numbers of scholars in average attendance in September of the years 1899 and 1900.

It has been seen that there were 4,359 children lost to the schools between September, 1899, and June, 1900. Or, looked at in another way, in order that the number of children in average attendance on September 30th, 1900, should be the same as on the same date of the previous year, an increase of 4,359 children during the three months, July—September, was necessary. Dr. Muir thinks the statistics for this quarter, when ready, will show that the increase was actually accomplished. But even so, a whole year's work will have been lost, for another section of the report shows that from the third quarter of 1898 to the same time in 1899 there was an increase in the average attendance of 7,261 children. Hence, as there has been an upward tendency in the annual increase of average attendance up to 1899, there should have been in September, 1900, an increase of about 8,000 children, instead of the stationary number which the optimism of Dr. Muir leads him to adopt.

Many other interesting details are to be found in the postscript to Dr. Muir's report. For example, the railway schools, even in the undisturbed

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districts, suffered very severely. The two schools at Modder River and the schools at Norval's Pont, Stromberg and Burghersdorp, were, of course, actually closed; but owing to the presence of military camps at such places as Naauwpoort and De Aar, and owing to the derangement of the train service which made it impossible to put down and take up children at stations at times to suit the school hours, the attendance fell almost in every instance.

As for the teachers, it would seem that the majority of them moved outside the fighting lines; and, curious to say, in two instances a sufficient number of their pupils moved with them to make it worth while to continue school work. As has already been indicated, however, some of them stuck to their posts with pleasing heroism, and in several instances the public has been indebted to them for very interesting diaries of events. In not a few cases, unfortunately, especially in the north-eastern districts, male teachers were implicated in the rebellion, and have not since been heard of in their districts.

School buildings suffered to a considerable extent. The Wesleyan Mission School at Mafeking was totally destroyed, the fine class-room of the Kimberley Poor School was seriously damaged by a shell, and of several small rural schools only the bare walls remained. Often when the buildings escaped the furniture and fittings were destroyed. On the whole, however, the loss in this way is not so great as might have been anticipated.

The material damage sustained by the Education Department during the war can be repaired easily and within a limited time; it remains to be seen how much can be done to bring back prosperity to the schools which have been cleared of their pupils, and to found new schools in sufficient numbers to compensate for the loss of a year's progress. It is earnestly to be hoped that men of all parties will unite towards attaining an end so eminently desirable.

TYPICAL SCHOOL TIME-TABLES.

III.—NORTH LONDON COLLEGIATE SCHOOL FOR GIRLS.

WE have given two typical time-tables of large public schools for boys, one a boarding school, the other a day school. This month we print a scheme of work in a large public day-school for girls. We are glad to take this opportunity of thanking Dr. Sophie Bryant, the headmistress, for permission to do this, and also for the trouble she has taken to present the time-table in a form suitable for publication. There will probably be no difficulty in understanding the abbreviations, but to prevent any misapprehension those in which any choice of interpretation seems possible are appended. It should be pointed out that the lessons are of from forty-five minutes to an hour in length, with the exception of drill, which lasts half an hour. The addresses shown are delivered by the headmistress, and generally take about twenty minutes.

A SCIENCE SYLLABUS FOR A SECONDARY SCHOOL.

By A. ABBOTT, M.A.
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IN drawing up a syllabus for natural science in a secondary school, it is necessary to consider first the various factors which determine the character and scope of the work to be done. The most important of these are:—

I.—The age and previous training of the boys entering the school.

II.—The length of the school life.

III.—The probable occupation of the boys after leaving school, as indicated by the industries of the district.

IV.—The number of lessons that can be devoted to the subject each week.

One of the most important requirements of any syllabus which is to be followed through a whole school is that it should be continuous, so that each boy, during his school life, may work through a logical sequence of experiments without any abrupt changes or breaks. This does not imply that the same ground should, in no case, be gone over a second time; a more or less empirical knowledge in the earlier stages may well be added to and deepened by further investigations when the mind is more developed.

While the whole syllabus is drawn up with a due regard to continuity, it should be planned in such a way that a boy entering the school in a higher form than the lowest should be able, from his previous experience, to pick up the thread and work with other boys who have entered the school at an earlier age. This is essential, as a new boy is not, as a rule, placed in a particular form because of his attainments in science, but is generally judged by the standard he reaches in other subjects. This furnishes an additional reason for a certain amount of repetition in the subjects of the syllabus. It cannot be denied that in many cases the previous training of the new boys does not count for very much, as in most secondary schools the majority of them are drawn from either elementary or private schools. In the former case, owing to the size of the classes where science is taught at all, it is impossible to have any training for younger boys in practical work, a necessary condition for a successful course of natural science; while in the latter case the accommodation for practical work is often very poor. Exception must be made in the case of boys who have previously been in a higher-grade or organised science school, as their training has usually been very good.

The factor which is least important, except to boys in their last year or two at school, is the probable occupation in after life. If a boy receives a thorough grounding in the principles underlying one branch of science and in accurate scientific methods of thought, he will be able to apply his knowledge later on to other branches without much difficulty.

The most important factor in determining the

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NORTH LONDON COLLEGIATE SCHOOL FOR GIRLS.

TIME TABLE.—MICHAELMAS TERM, 1900.

Form.	VI*a.*	VI*b.*	Up. V*ai.*	Up. V*aii.*	Up. V*b.*	V*a.*	V*b.*	V.	Up. IV.	IV*a.*	IV.	IV*b.*	Lr. IV*a.*	Lr. IV*b.*	Up. III*a.*	Up. III.	III.	II.
MONDAY.	Gk Hist	Eng Hist	Scrip	Algb	Lat or Ger	Math	Lat or Ger	Lat or Ger	Drill	Algb	Drill	Fr	Algb	Boty	Arith	Geog	Hist	Arith Eng Poet
	Gk	Ger	Chem	Test Paper	Algb or Boty	Hydros or Hist	Gram	Algb	Scrip	Drill	Scrip	Geog	Drill	Fr or Ger	Scrip	Fr	Drill	Drill
	Drill	Lit	Drill	Drill	Drill	Lat	Drill	Lit	Scrip	Lat or Ger	Fr	Eng Gram	Lat or Ger	Geog	Ger	Sing	Arith	Dict
	Math	Study	Algb	Lat	Geog or Logic	Chem or Eng Comp	Fr	Fr Trans	Arith	Lit	Eng Poet & Dict	Drill	Science or Arith	Drill	Drill	Arith or Ger	Sing	Read
	Study	Study	Lat	Hydros	Scrip	Drill	Physiog	Drill	Lat or Ger	Scrip or Arith	Lat or Ger	Arith	Eng Poet Geog	Arith	Sing	Drill Read	Read	Boty
TUESDAY.	Lit	Lit	Geom	Lat	Fr	Lat	Boty	Boty	Adrs Hist	Adrs Poet	Adrs Fr Poet	Adrs Poet	Fr	Adrs Fr or Ger	Lit	Arith	Draw	Geog
	Eng Hist	Ger	Lat	Mech	Lit	Chem or Fr	Fr	Arith	Boty	Geom or Arith	Boty	Boty or Arith	Scrip	Sing	Fr	Dict	Ger	N'dlewk
	Recreat	Arith	Chem or Fr	Play Fr	Poet Geom	Arith or Hydros	Arith	Play Geom	Arith	Lat or Ger	Play Hist	Games	Games	Eng Poet	Hist	N'dlewk	Arith	Draw
	Study	Arith	Gk	Algb	Hist	Gram	Fr Trans	Gram	Play Fr	Lat or Ger	Sing	Fr	Geom	Fr Trans	Science	Draw	Fr	Dict and Read Fr
	Lat	Fr Hist		Hist	Sing	Sing	Sing	Sing	Sing	Arith	Arith	Ger	Sing	Draw	Arith	Hist E Poet	N'dlewk	Arith
WEDNESDAY.	Algb	Study	Hist	Lit	Lat or Ger	Math	Lat or Ger	Lat or Ger	Fr	Eng Gram	Geog	Hist	Science	Arith	Arith	Science	Trans	Arith
	Fr	Fr	Algb	Lat	Physiol or Fr Trans	Chem	Hist	Arith	Eng Gram	Fr	Gram	Arith	Fr	Play	Trans	Gram	Dict	Dict
	Geom	Ger	Mech	Eng Lang Eng Hist	Test Paper	Fr	Play Lit	Fr	Geom	Play Lat or Ger	Geom	Fr Trans	Arith	Hist	Ger	Fr	Drill	Drill
	Rom Hist	Lit	Physics	Algb	Arith	Arith	Fr Trans	Geog	Arith	Scrip	Arith	Boty	Lat or Ger	Scrip	Games	Lit	Arith	Obj Less
			Adrs	Adrs	Adrs	Adrs	Adrs	Hist Adrs	Fr Adrs		Adrs	Scrip	Gram Adrs	Adrs	Boty Adrs	Ger Adrs	Geog Adrs	Writ Read. Adrs
THURSDAY.	Lat	Lit	Math	Hist	Lat or Ger	Math	Lat or Ger	Lat or Ger	Drill	Geom	Drill	Lit	Adrs Drill	Boty	Adrs Geog	Adrs Fr Poet	Adrs Fr Poet	Fr
	Math	Ger	Lat	Chem	Algb or Boty	Hydros	Scrip	Algb	Arith	Drill	Arith	Scrip	Hist	Fr Trans	Arith	Scrip	Drill	Gram
	Drill	Eng Hist	Drill	Drill	Drill	Fr Trans	Drill	Scrip	Eng Poet	Fr	Fr Trans	Fr Trans	Algb	Geog	Dict Ger	Arith	Ger and Dict	Drill
	Gk	Study	Geom	Lat	Gram	Lat	Fr Gram	Fr Trans	Geog	Physiog	Hist	Drill	Fr Trans	Drill	Drill	Drill	Arith	Sing Eng Hist & Arith
	Trig	Study	Physics	Lat	Scrip	Drill	Arith	Drill	Lat or Ger	Arith Eng Hist	Lat or Ger	Physiog	Fr Gram	Arith	Fr Poet	Dict	Lit	
FRIDAY.	Lat	Ang Sax	Fr or Gk	Fr	Adrs Geom	Adrs Hydros	Adrs Eng Poet	Adrs Geom	Physiog	Algb	Fr	Ger or Fr	Draw	Arith	Hist	Boty	Boty	Scrip
	Lit	Fr. Hist	Hist	Chem	Lat or Ger	Math	Lat or Ger	Lat or Ger	Boty	Fr Trans	Boty	Boty	Geom	Hist	Fr Verbs and Gram	Geog	Fr	Drill
	Gk	Fr	Eng Lang	Geom	Geog or Logic	Play Scrip	Hist	Hist	Geom	Hist	Geom	Geog	Science	Fr		Dict and Play	Dict	Fr Trans
	Study	Study	Hydros	Physics	Arith	Lat	Arith	Fr	Fr	Geog	Fr Verbs	Hist	Lat or Ger	Eng Gram	Draw	Science	Scrip	Arith
							Geog		Hist	Lat or Ger	Draw	Arith			Geog Lit	Fr Trans	Gram	Dict Read. Adrs

Gk = Greek; Ger = German; Hydros = Hydrostatics; Fr = French; Lit = Literature; Physiog = Physiography; Mech = Mechanics Physiol = Physiology; Adrs = Address; Boty = Botany.

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scope and character of a science syllabus is that of the time that can be spent on the various subjects. In organised schools of science very often as many as six hours a week are allotted to their study, but in other schools where science is only regarded as one of many subjects, not more than three hours can be spent on it, except by boys in the higher forms who have begun to specialise. Two results follow from this: (1) that only one branch of science can be taken up during the school year, it being obviously impossible to attempt more; (2) that the science master must endeavour to call in the services of his colleagues by correlating his work with theirs, his chief collaborateurs being the teachers of drawing, mathematics, and geography.

The correlation with drawing may be maintained through the lower forms, but it is inadvisable that it should be continued in the middle forms, as it could then consist merely of outline drawings of apparatus. It seems better to limit it to the representation of the various objects examined during the earlier period when the youngest boys are engaged in nature study.[1] At the beginning of the study of physical science and mathematics the correlation between the teaching of the two subjects is very close, but at a later period the points of actual contact become fewer, mathematics being regarded rather as an instrument than as a cognate subject. Until a boy begins to specialise in some one subject, an acquaintance with elementary algebra and arithmetic will carry him through a great deal of his physical science, always supposing that this is studied experimentally with a view to acquiring a knowledge of principles rather than a facility for working out numerical examples. To justify this assertion, which, it must be remembered, only applies to boys in the middle forms under the age of 15, it is necessary to consider the subjects taken up. In physics, measurements of length, area, and volume, elementary mechanics, hydrostatics, and heat are generally regarded as the most suitable for beginners.[2] A knowledge of the four rules and of proportion in arithmetic, with algebra up to simple equations, is necessary for this. For the subject of chemistry an acquaintance with proportion, including percentages, is enough. The subjects of light, electricity, magnetism, and sound are better reserved for subsequent study, though in each subject important laws can be discovered without the aid of any but elementary mathematics. That correlation is possible between experimental science and physical geography is obvious, seeing that such processes as distillation, solution, decantation, and crystallisation, which are carried out in the laboratory on a small scale, are continually going on in nature on a very much larger scale.

The following syllabus has been drawn up for a secondary school of 200 boys, where 10 is the entrance age, and 17 the maximum leaving age. The number of lessons allotted to the subject each week is three, except in the case of a few boys in the highest form who intend to take up engineering or some kindred occupation, and naturally spend a great deal more time in the study of physical science. It is found that very few boys enter the school at ten years of age, the lowest class having an average age of about ten and a half. This class is merely preparatory for the next higher, and there are therefore five school years to be devoted to science before specialisation is begun.

FIRST YEAR. *Average Age* 11½.

Nature Study.—Boys of this age are unable to undertake the systematic study of either physics or chemistry, and nature study seems to be best fitted to train them in observation, and in such abstract reasoning as they are capable of. They are naturally attracted much more by animate than by inanimate nature. The great difficulty in this subject is the untrustworthiness of the weather, as the study must be, to a very great extent, undertaken out of doors. It is very disappointing to the teacher, when he has prepared a lesson on climbing plants, for instance, to find that the weather is unfit for work out of doors. Another difficulty is the length of time taken by the experiments. If a small boy plants seeds and has to wait for the shoots to appear above the ground, he is inclined to forget all about them in the interval, during which many other things have been occupying his attention.

The discipline is not a very serious matter, as the boys, for work in the garden, are divided into batches of five, each one presided over by a monitor, who is usually keen enough in exercising his privileges. With regard to practical work in school, it is obviously not so easy to arrange matters in this way, as the boys need individual attention and are very young. The difficulty can, in some measure, be obviated by allowing the boys to work in pairs, care being taken in the choice of partners, and by seeing that plenty of work is provided for them. It still, however, remains, to a certain extent, and it is difficult to see any way in which it can, with a limited staff, be got over, as a class, which is not too large for any other subject in the curriculum, cannot be divided in the one subject of natural science.

It is inadvisable to draw up a syllabus in nature study, to which the teacher rigidly adheres, owing to the variable character of our climate, but the following gives an idea of what is done:—

The School and its Surroundings.—Examination of wood and stone. Of soil and gravel. Comparison of soil of garden with gravel of playground. Time needed for water to disappear from each under varying conditions. Difference between soil on surface and that underneath. Difference between ordinary soil and soil which has been heated.

Connection between Vegetable life and soil.—Food of plants. Loosening of soil. Digging. Worms. Frost. Food taken up in liquid state. Plant grown from seed, food being supplied.

[1] See "Nature Study in Elementary Schools" (Wilson). And "Nature Study in Schools": an address by Professor Wilbur S. Jackman (*Journal of Education*, February, 1900).

[2] See, for instance, the Syllabus of Elementary Science adopted by the Headmasters' Association.

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(Each boy watches his own plant, sketching it and its parts at various stages.)

The Natural Friends and Enemies of Plants.—Worms, bees, various insects, parasites.

Protective mimicry.—Metamorphoses of Insects.

The Weather and Conditions which Influence it.—Construction of weather chart, entries being made daily. Direction of wind, with use of compass. Frost. Depth to which hardness of ground is noticeable. Rainfall, with use of rain gauge.

Temperature, with use of Thermometer.—Barometer.—The atmospheric pressure is marked, though the use of the barometer must at this period be based on empirical knowledge.

The Work done by Rain.—Formation of springs and rivers. The work done by rivers.

Towards the end of the year the measurement of length in the metric system is begun. On these measurements all the work in decimals is based, every example being concrete. After having finished the addition and subtraction of lengths, the boys proceed to the multiplication and division of lengths by whole numbers. They then learn the operations involved in the addition, subtraction, multiplication and division of vulgar fractions, the examples being again concrete, and, at the beginning, based on actual measurements made with a foot rule. It ought to be stated that every boy in the school is provided with a ruler on which both English and metric measures are marked.

SECOND YEAR. *Average Age* 12½.

Boys at this stage have become familiar with the ordinary operations involved in the use of decimals and vulgar fractions, and now continue their vulgar fractions as mathematics, and no longer quite so concretely. In the previous stage they have not learned to multiply or divide decimals by decimals, but have confined themselves to the multiplication and division of *length* by whole numbers. They now go on to the measurement of *area*, beginning with the area of a rectangle. It is easy for them to extend their knowledge of multiplication by whole numbers to multiplication by decimals. Multiplication by decimals less than unity is rendered possible by changing the unit employed from a centimetre, or decimetre, to a metre.

The word "division" is applied to two distinct operations; first, that of dividing a certain quantity into an exact number of parts; and second, that of finding how many times one quantity is contained in another. The first operation has been learned in the previous year, and the second is now begun, as it involves the division of decimals by decimals. Concrete examples are easily found. Examples involving the same operation arise from such processes as finding the length of the side of a rectangle, having given the area and the length of the other side. Examples involving all the various rules are derived from determinations of the areas of parallelograms, triangles and polygons, various properties of these figures being found incidentally.

Much of this work is, of course, left to the mathematical master, while the science master continues the study of physical geography begun in the previous year. The following is the syllabus in use, experiments on a small scale in the laboratory being carried out by each boy, as he gains thereby not only a better knowledge of physical geography, but also an acquaintance with the more usual methods of manipulation in chemistry, an acquaintance which will be of use to him in later years.

THE PROPERTIES OF WATER.

Solution of Solids.—A solid dissolved in water spreads through the solution. It does not settle on standing. It can be recovered by evaporation. It passes through the pores of a filter paper. Insoluble substances can be removed by filtration, or by decantation. Drinking water contains solids in solution. River water contains insoluble solids.

Distillation.—The work done by rivers (*a*) in dissolving solids, (*b*) in carrying undissolved solids.

Reasons for saltness of sea, for freshness of rain water, for formation of mudbanks, deltas, &c. Comparison of rivers of Lancashire and Yorkshire.

Solution of Gases.—Drinking water contains dissolved air. Estimation of amount.

The Formation of Waves on Water.—The work of the sea. The work done by ice. Forces tending to raise land. Earthquakes. Volcanoes. Coral. Shape of the Earth. Latitude. Longitude. Motions of the earth. Day and night. Seasons. Phases of moon. Eclipses.

Measurement of Time.—Sundial. Water clock (by running water out of burette and noticing time taken for each 5 c.c.). Pendulum.

The Sun.—Examination of white light. Reflection and refraction of light.

THIRD YEAR. *Average Age*, 13½.

Boys in this stage have finished their measurements of length and of area. Having found the areas of rectangles, parallelograms, triangles and polygons, they know something about angles, and are therefore prepared to begin geometry. Instead of adopting Euclid, an introductory course has been drawn up which provides a gradual transition to abstract geometry from physical measurements. In comparing two lengths he has always been accustomed to measuring each with a ruler, and has therefore adopted the axiom that things equal to the same thing are equal to one another. He has for two years been constantly superposing one length on another. It is therefore natural for him to compare two angles either by the indirect method of placing a protractor, which he makes for himself, on each of them, and finding whether both contain the same number of degrees, or by the direct method, to which he has hitherto been unaccustomed, of placing one angle on the other. Hence he begins his propositions with those capable of proof by super-position. Having thoroughly grasped these, he uses them to prove other propositions. At this point, his geometry becomes more abstract, and the work is left to the teacher of mathematics.

The science master begins now with the area of a circle, and the value of π, and goes on to the estimation of volume.

The rest of the syllabus is as follows:—

The volumes of right prisms, cylinders, spheres, and irregularly shaped bodies. Weighing. Relative density. (Relative

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density is taken, as the boy has at this period reached proportion in arithmetic.)

It is evident, both in this syllabus and in that for the other years, that great care is necessary in drawing up the whole school routine for each year, and that the teachers of science and mathematics must be in close touch with the work of each other. It has been found, in actual practice, that the quantity of work done can be so regulated that the boys do study the cognate parts of each subject at the same time. This arrangement has been greatly facilitated by the division of the staff into committees for the discussion of the curriculum, the mathematical and science masters being on the same committees.

FOURTH YEAR. *Average Age*, 14½.

In this year boys are expected to take a public examination, and the work has to be regulated with due regard to the requirements of the examining body.

Syllabus:—

Elementary hydrostatics. Barometer. Boyle's Law.
Elementary mechanics.
Principle of Archimedes.
Elementary heat.

FIFTH YEAR. *Average Age*, 15½.

In this stage the subject studied is elementary chemistry, treated more or less according to the so-called "heuristic" method.

Boys who remain in the school after this begin to specialise, working for the various examinations they are bound to take.

THE TEACHING OF ENGLISH LITERATURE.[1]

BY W. J. ADDIS, M.A.
Headmaster of Holborn Estate Grammar School.

TWENTY years ago, a paper on this subject would have been an interesting, but not an important, detail in the ordinary round of educational lectures or papers. To-day a different condition of things prevails. The interest in the subject remains, perhaps, the same—that is, unfortunately, confined to few. But its importance has increased tenfold—a fact recognised, in the main, by even those teachers to whom both by predilection and by practice the literary branch of education makes but a subordinate appeal. Even the chemistry master in a school nowadays will shake his head sorrowfully and agree that a boy's power of expression and mastery of language are very insufficient and a great drawback to his assimilation of those valuable principles, those nourishing sentiments, and eternal truths for the inculcation of which chemistry alone affords adequate scope.

But, true as this may be, handicapped as a student undoubtedly is in other subjects because of his feeble and flaccid grasp of language, there is a deeper sense in which the boy who is ignorant of literary models has been unfairly treated by his educational environment. Literature—by which I mean the best and most artistic record of thoughts by men about men; by which I mean that appeal of humanity to humanity, of mind to mind, not to one limited portion of it, but to the emotion as well as the intellect—literature, in this sense, has for even the schoolboy a triple function. One of these elements is the production of literary power, the power of admirable, not merely commonplace, expression during the boy's school life, and in connection with his other school work. We teachers know well by experience the cramped, stiff, laboured work of boys who have no acquaintance with literary models and have missed the teaching with which the study of literary models should be connected. Contact with the literary model and the literary teacher—that is, the teacher whose own knowledge of literature is wide and whose sympathy with the subject is intense—contact with these, in a fair number of lessons per week, is of inestimable service in promoting the development in the boy of the valuable art of verbal self-expression.

The second function of literature as a school subject—always remembering what that connotes: contact with the literary model and the literary teacher—is not less important, though possibly less apparent, as regards other school subjects. I mean the function of enriching the whole mind, enlarging the contact with humanity on its best side, familiarising the youthful mind with the valuable thoughts of a Wordsworth or the superb conceptions of a Shakespeare.

And the third function of literature is not so much directed towards the present as the future. Man's mind is restless and must be occupied. What greater boon, therefore, could be conferred by a teacher upon a scholar than the taste for literary culture, the faculty for literary enjoyment—the will to read great authors, and not trash. Our well-trained mind is not only a mansion and a dwelling place for loveliness: it is also an aspirant towards what is permanently good.

Having thus recognised the three functions of literature—(1) to help other school work, (2) to enrich the mind in the present, and (3) to provide at once a store and a stimulus for mature years—I will pass to the practical investigation of the methods by which to spread the subject over the whole of school life.

In the first place, we must not suddenly superimpose literature on the V. or VI. Form boy after having allowed his literary sense to go starving in the lower Forms. There is a tendency to do this sometimes, from one of two causes: (1) Either his masters suddenly awake to the fact that the boy cannot write passable, much less admirable, English in his ordinary school work, or, (2) he is going in for some examination in which English Literature forms an important detail. (Here I may mention the London Intermediate Scholarship. It is hopeless for a boy to take the General Literature paper set there unless he has been a reader on his own account for many years; in other words, unless the instinct for literature has been fostered in his extreme youth.) Literary insight, literary appreciation cannot be crammed. Dates, facts, and a certain *memoria technica* can be crammed, it is true, but not the critical faculty. So it comes that, too late in his school career, and from motives the most ignoble on the part of his masters, the boy is suddenly set on to a study which bewilders and disgusts him and for which he inevitably acquires a hearty distaste. This, it is hardly necessary to remark, effectually prevents him from going to literature for solace and support in his maturer years.

We must, then, begin our literary work down very much lower. There is no reason why it should not begin in the I. and II. Forms. The simplest way to do this is to have plenty of repetition work. Three or four simple poems like "Lucy Gray" would amply suffice for one term's work. There is no need for a printed book. Indeed, the difficulty of procuring

[1] A paper read at a meeting of the Assistant-Masters' Association held at University College School, November 7th, 1900.

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a Child's Anthology (we must remember that we are now dealing with boys of eight or nine years old) is very great. Most of the cheap ones contain trashy verse, which is what we want to exclude. But this difficulty is got over by the following method. Let each boy have an exercise book kept for the special purpose of copying from the blackboard two verses at a time of the poem taught. This work should be done slowly and without mistakes. Also, a general idea of the sense of the coming verses should be given before any writing is shown; and contributions to the verses elicited from the pupils by asking them to supply various words for which you have given an equivalent, or by asking them to fill up a rime, &c.; *e.g.*, in "No mate, no comrade," &c., say, "This verse tells us that Lucy had nobody to play with," and try to get the words "mate" and "comrade"; similarly "grew" can be elicited as a rime-word. A process like this will soon make the little boys conversant with synonyms, and they should be encouraged to select the best. Praise should be given to those who succeed. When the eight or ten lines have been talked over in this way, copying can be begun. For my part, I always consider marks a great stimulus to correct and tidy work; those who do not care for marks will, however, find it most useful to have a scale of comments—"poor," "good," "excellent," &c.—and take care to write the comment clearly at the side of the verses when complete. It will be found that mistakes in copying will soon be very few indeed; and thus the benefit of a writing lesson will *en passant* be afforded. Then each boy should come up in class, as he is able to say his two verses quite correctly, with no help whatever. The eagerness to become one of the clever standing boys and to leave the slower sitting lot is a great incentive to speed in committing to memory. The literature lesson becomes, if treated in this way, even with little boys, both interesting and productive of great benefit. The talking over is the most important part. It inculcates, if carried out in the manner I have suggested, what is, after all, the great value of literary studies—the discrimination between synonyms.

One important warning, however, should in this connection be given. Keep the literary lesson purely literary—purely educative of the verbal judgment, the taste for words. In most schools the practice is, I think, to adulterate this work with simultaneous attention to the grammatical or philological aspect of language, *e.g.*, to fasten little lessons in analysis, or parsing, or derivation, on to words and sentences in the passage of literature. This, I am convinced, is a mistake, which has its root in a psychological basis. Analysis is an appeal to the logical faculty; literature rather to the æsthetic. When we are busy in the education of the latter, the former must play a subsidiary part, in so far, of course, as any division of labour can be made in the case of two faculties so closely connected. And I am sure that grammar is so difficult and distasteful in its inception to both teacher and pupil, that in the line, "Ever the fitful gusts between," the difficulty for a small boy of recognising the objective case will do a great deal towards deadening his recognition of "gusts" as the best word for strong winds. The gust, you see, evolves into disgust, and the word becomes Byron's

> Drilled, dull lesson, forced down word by word in my repugnant youth.

Therefore I would advise, in the case of I. Forms that (1) a piece of the quality of "Lucy Gray" or "The Wreck of the Hesperus" be chosen, (2) that it be talked about and its actual phraseology drawn from the class, (3) that it be correctly transcribed and committed to memory, two verses at a time, and (4) that no grammatical lesson be grafted on to it.

Now, with III. and IV. Forms two distinct changes are desirable: (1) A text-book should be provided (instead of the copying) and (2) the pieces should be longer, like "The Lay of the Last Minstrel" or "The Ancient Mariner." The text-book should contain plenty of suitable annotation, not philological but exegetic, explanatory. While equal attention should be paid to verbal knowledge, we can now introduce written paraphrase, and quite so much need not be committed to memory. Also, a very important addendum to this programme should be a weekly informal literary lesson, in which the master selects passages from, say, "The Deserted Village,' "Hart-leap Well," or "The Miller's Daughter," and elicits the diction from the class on the same lines as before. A note should be kept of the passages so treated, and in a year's time it will be found that a class will have gone through about thirty passages, and, if the thing is done properly, will have acquired a fair differentiating knowledge of authors, their styles, predilections, and peculiarities. Thus they will begin to feel (rather than merely know) that Wordsworth makes the desert smile with flowers, that Tennyson is more pretty than potent, that it is gold that Browning smites on his rude anvil. And here I would suggest that teachers should not be frightened of blank verse; let it be occasionally introduced, even to IV. Form boys, and one or two examples committed to memory, because the true test of verbal melody lies, after all, not in the "chimes of the rimes that sing sweet as they go," but in that stately and yet flexible measure (adapted alike for solemnity, for tenderness, and for grace) of which Landor declared that, by its side, even the great Homeric hexameter sounded to him tinkling.

A further practical hint to the teacher is this: let him study his own diction, let that be as literary as he can make it; it need not be stilted, pompous, or high-flown, but he must beware lest it be too colloquial; for the colloquial is near akin to slang, and slang is perilously close to vulgarity—*facilis descensus Averno.*

I remember full well how my own appreciation of literature was quickened and what a valuable addition was made to my mental equipment through lessons of this kind given to the IV. Form at my school by the headmaster in person. That headmaster is now dead; but if to live in the affectionate esteem of those whom he trained—the obscure reader of this paper and a great living poet alike—if so to live is only partial death, then of Henry St. John Reade it may truly be said: *Non omnis est mortuus.*

This Latin sentence, gentlemen, leads me parenthetically to explain what I meant by saying, at the outset of this paper, that the importance of teaching English literature is greater to-day than it was some years ago. The reason is this. Some years ago—the phrase is vague, but you may attach to it what of numerical definiteness you will—the literary instinct, the feeling for diction, the care of form, was much more widely cultivated, owing to the general study of the Classics—a study which, to-day, subjected to the severe onslaughts made upon it of recent years, now limps lamely along, a poor camp-follower rather than one of the captains of the educational march. When the *concinnitas* of Vergil, the *felicitas* of Horace, were part and parcel of the equipment of every schoolboy; when his mind was familiar with

> Te, dulcis conjunx, te solo in litore secum,
> Te veniente die, te descendente canebat.

Or with—

> Lenesque sub noctem susurri,
> Composita repetantur hora.

He had, in translating them into English, the inevitable compulsion to seize or to select the best English word, and this gave him a mastery over his own language, a familiarity with synonyms, a discrimination in their choice. In my school-days, all the Classical Forms were readers of the best English—the thing could not be helped; they had to be conversant with the Bible for Homer, with Landor for Martial.

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Nowadays, with the cause the effect has gone, too; the average London day-school boy knows as much of his native literature as he does of Chinese. English must now be taught through English.

Well, gentlemen, from III. and IV. Form work I will now pass; but first let me summarise the suggestions I have made regarding it:—

(1) Repetition once a week only.

(2) Paraphrase once a week.

(3) Informal literary lesson, to make boys conversant with several authors.

(4) Teacher's vigilant criticism of his own diction.

With the highest Forms the great aim should be to cultivate critical power. A play of Shakespeare's is typical work. How is such a subject to be tackled?

Let the boys be instructed to approach a literary work on three sides—(1) the æsthetic, (2) the informative, and (3) the grammatical. I place these in what I consider their order of value. To take "Henry V." as an example. I should attach most importance to the fact that a boy, after reading this play, should be able to select Act IV. as containing the richest and finest literary expression; that he should, in this Act, be disposed (of his own accord and before the master tells him to, on account of the examination) to learn by heart (1) the chorus, (2) Grandpré's description of the pitiable condition of the English before Agincourt, (3) Henry's prayer before the battle, and (4) Henry's address to his soldiers before engaging the enemy. I should cultivate the capacity of selecting lines, and even phrases, like the battle's "umbered face," "tardy-gaited night," "gum down-roping from their pale-dead eyes"; also of appreciating the beautiful bright ray of colour introduced into the sensation of wide dimness fraught with tragic imminence, which Shakespeare gives in the person of Henry, young and vigilant, passing cheerily at dead of night across the sadly patient host.

On what I have called the informative side, boys must be taught to become familiar with the items of historical or social information which the play, by expression or implication, contains. This is not work so much for the teacher as the text-book. The same may be said for the grammatical side of the study, especially in the philological portion, which there is a tendency to overdo, because of the comparative ease with which it is learnt. Yet boys should learn to understand that no play of Shakespeare can be thoroughly mastered without due attention to these three aspects; and that if every piece of literature which they study is treated in this way, their knowledge of it will be pleasurable, valuable, complete—*totus, teres atque rotundus.*

The VI. Form boy, moreover, should paraphrase, but not on paper, only orally. His paper-work should consist mainly of composition on literary subjects, synopses of works, comparative study of styles, periods, lives of authors, the connection between the circumstances of their environment and their mental output, and so on. Also, what seems to me a highly important and quite a feasible point is that of an occasional verse composition. A subject and a metre should be specified, and the number of stanzas limited; unless this be done, boys will experience great difficulty in making up their minds, and much time will be wasted. At first, in this experiment, we shall naturally be confronted with much crudity, but it is astonishing how quickly this will be toned down. The metrical awkwardnesses are always greater and more prolonged in the case of boys who (from not having passed through the school) have not in early years been familiarised with verse movements. When the exercise is over, the various versions should be publicly criticised by the boys themselves, and the class should be shown how a poor version could have been turned into a much better one by some modification of epithet or even of order. Lastly, a final version should be copied, which incorporates the best points of each version. In this kind of work the class will take pleasure and feel pride. The exercise may be varied by a demand for, say, ten lines of blank verse, and the metrical value of the "cæsura," or sense pause, thus practically appreciated. Three or four of these verse exercises a term will do a good deal to consolidate knowledge of the points in prosody which have presumably been already indicated in previous "informal class" lessons.

A further subject of study in the highest Form should be this discussion of certain commonly used but little understood terms, with the purpose of clearly envisaging the ideas, and arriving at a definition of the terms. I mean such words as "literature," "style," "comedy," "humour," "poetry," "satire" (in its literary sense). Why should not the VI. Form leave our schools knowing what is connoted by these terms, or knowing, at least, what opinions have been held regarding their connotation? The habit of mind acquired by this kind of investigation is eminently useful if we consider the great number of similar terms regularly employed in ordinary life, but conveying no definite meaning to either those who utter or to those who hear them—"religion," "politics," "socialism," &c.

And, lastly, the holiday task which it is now the fashion to set and which usually takes the form of a novel, might, in the case of a VI. Form, be altered to a work of high literary merit, not necessarily a novel, such as "Sohrab and Rustum," "The Knight's Tale," or "Atalanta in Calydon," or "Maud," or "Christ in Hades," or "The School for Scandal," or Browning's "Dramatic Lyrics," or "Childe Harold"—the difficulty of choice resolving itself into an *embarras de richesses.* A searching paper should be set, and, so important is it that the paper should give scope to the literary appreciation of the student, that I have drawn up some questions on the lines on which I think that these papers should run. It is on "Sohrab and Rustum."

(1) Illustrate from this poem, and discuss the statement, that complex sentences should be avoided in narrative verse.

(2) Quote lines in which you would say that the notes of (1) sublimity and (2) pathos have been rightly struck.

(3) Discuss Matthew Arnold's blank verse.

(4) Quote three similes occurring in the poem, mentioning also which you think best, and why.

(5) In what connection do the following occur: (1) polar star, (2) far seen pillar, (3) golden platter, (4) clear porcelain, (5) huddling young, and (6) sinewy wood cutters?

The development, then, of our scheme of literary instruction for the highest Forms involves the following points:—

(1) An inculcation of the threefold aspects in which a literary work should be studied (æsthetic, informative, and grammatical).

(2) Oral paraphrases.

(3) Definition of literary terms.

(4) Careful paper on holiday task.

(5) Verse composition.

(6) Provision of a literary library.

As a most useful supplement to these efforts let me recommend a fair sprinkling of high literary works in the school library. The tendency is to stock these with fiction and dictionaries; sometimes with patriotic works which no boy reads, but which the master has seen well reviewed (like Captain Mahan's "Sea Power"). I do not say keep these and *id genus omne* out altogether, but give the others a chance too—"Christ in Hades," Tennyson, M. Arnold, "Sesame and Lilies," &c.

This, gentlemen, is all the practical advice I can offer you on this subject at present. I cannot too strongly impress upon you that literature is the chief channel through which the

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emotional part of a boy's mind is appealed to in his school work; and that, for the boy's future good, as much attention should be paid to this part as to any other. Every man has leisure time, and requires relaxation—and seeks it. In the case of the boys who are now under your care, it largely depends upon yourselves whether their leisure hours in maturity are spent in the contemplation of high, noble, and beautiful thoughts, or employed in more ignoble ways. I would ask you, therefore, to put into practice, according to the boys' ages, the suggestions I have made, and I think by so doing you will realise a simple but a most important ideal—the development of a sound taste for good literature.

INTERNATIONAL CORRESPONDENCE IN GERMANY.

INTERNATIONAL correspondence as a means of acquiring modern languages seems to have established itself in Germany. During three years ending in June, 1900, the Centralstelle at Leipzig has found correspondents for 6,641 Germans, of whom 91 per cent. are pupils in schools. Allowing for a certain inevitable leakage, we may estimate that twelve or thirteen thousand persons are engaged in this educative correspondence through this agency alone. The promoters of the movement at Leipzig, whose report has just reached us, have worked hard to bring about this result. Not only have 5,000 copies of last year's circular been distributed among schools and colleges in Germany, France, England, Scotland and North America, and 200 copies of a pamphlet on the subject to the leading journals of Germany and France, but a special appeal has been made through the post to women's training colleges in Germany to the number of 70, to respond to requests for German correspondents from young ladies in North America; and the most careful guidance has been given in every issue for the conduct of the correspondence as a system, as well as directions in fullest detail, for addressing, posting, &c.

In significant contrast with all this energy and the response it has evoked stands the fact that for the year ending June, 1900, the whole of Great Britain and Ireland supplied only 105 correspondents; so that had not North America come to the rescue with 238, it would have been impossible to find the requisite number. As it is, the report bewails the dearth of English-speaking applicants, when France sent 801 in the same twelvemonths. Even then the Fatherland had over 240 unsatisfied applicants. Surely it is impossible to avoid the conclusion that we are as listless in the pursuit of modern languages as our methods of imparting them are antiquated.

The North American Modern Language Association (1899) last year gave emphatic approval to the principle of international correspondence, which seems to have gone the round of the educational press in Germany. A reprint of the recommendation in the current issue of the *Mitteilungen* makes it seem excusable to refer again to its principal clauses. They lay stress on: (1) the advantage of acquaintance with contemporary foreign life, as means of general culture and broad-mindedness: (2) the usefulness of such correspondence as a motive to correct composition. And they conclude: "The committee is, therefore, united in believing that the international correspondence can, with average students, be made a valuable adjunct to foreign language study, and that it certainly deserves a full and impartial trial by interested teachers."

In this connection, the Leipzig *Mitteilungen* makes some interesting observations on the unanimous resolutions passed in favour of the international correspondence at the Paris Exhibition. Both the Congrès International de l'Enseignement des Langues Vivantes and the general body of the Congrès International de l'Enseignement Secondaire warmly recommended the system to the attention of educational authorities, as *un auxiliaire précieux* (see resolution of August 3rd), all the speakers without exception throughout the debates admitting its claims. The occasion was noteworthy as the only one at which schoolmasters and mistresses of all ranks, and not alone modern-language teachers, have considered the subject, and of course the first time that it has been the subject of international deliberation.

The Germans are apparently resolved on the acquisition, by all possible means, of the French and English languages. The latest movement is probably the *Veranstaltung fremdsprachlicher Recitationen*, by which it is proposed to introduce to students, through the medium of the living voice of an educated reciter, passages from the literature of the foreign language. Thus the English selection includes: Shakespeare, "Julius Cæsar" (Antony's speech); Byron, "The Ocean"; Longfellow, "A Psalm of Life"; Lord Chatham, "On the American War"; Macaulay, "A speech delivered in the House of Commons on March 2nd, 1831"; Dickens, "A Christmas Carol, I"; and Mark Twain, "The Awful German Language." These have been published in a convenient form, and previously studied, and trials have been made in many German towns, which, to judge from figures given, and press comments, have given the most promising results. Nor is it left to private enterprise alone, for on October 9th of this year the Town Council of Magdeburg voted 300 marks for such a recital to be given in the town-hall buildings. Doubtless their example will be widely copied—but it will be in Germany, not in England, we fear! Lectures, too, have been delivered in the foreign languages on set topics, and both lecturers and reciters have been hitherto graduates and natives of the countries whose language they have to illustrate.

AN INTERESTING EDUCATIONAL EXHIBITION.

WITH their usual enterprise the Technical Instruction Committee of the Manchester City Council have secured, for exhibition in Manchester, the fine collection of educational exhibits sent by the United States Government to the recent Paris Centennial Exhibition to represent the numerous phases of educational effort in the States. Mr. J. H. Reynolds, the Director of the Manchester Municipal Technical and Art Schools, paid two visits to Paris in order to fully study the section of the Exhibition devoted to education, and after his first visit he reported to his Committee that they could not do a better service to education in Manchester and the district than to take steps to secure the American exhibit as a whole for that city.

The Technical Instruction Committee authorised their Chairman (Mr. Alderman Hoy) to take any preliminary steps towards securing the exhibits which were possible. Mr. Hoy proceeded to Paris, and having examined the American collection of educational objects of interest, he fully endorsed Mr. Reynolds's recommendations, and gave the Director authority to proceed with the negotiations with the United States Commissioner. These transactions were brought to a satisfactory conclusion, and an agreement was made by which certain of the fittings have been purchased by the Manchester Committee and the whole of the exhibits secured for display in Manchester.

An arrangement was come to with the Co-operative Wholesale Society, Limited, to ship the exhibits by one of their steamers to Manchester *via* the Canal. This was successfully accomplished,

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and the American part of the Paris Exhibition, so far as education was concerned, can now be seen in the large hall of the Central Higher Grade School of Manchester. The Technical Instruction Committee are very anxious that it should be understood that teachers and other educationists from all parts will be welcome at the Higher Grade School to examine this excellent and instructive exhibition. Everybody has heard over and over again of the advanced state of American education, but few have had the opportunity of going to the States to study it for themselves. But now, however, owing to Manchester enterprise and enthusiasm for education, an opportunity is provided by which the subject can be fully studied without crossing the ocean. We hope the attendance will be such as to recompense the Manchester Committee for their public-spirited action, for there can be little doubt that it is only by a practical familiarity with the educational methods of other countries that our teachers can be got to really appreciate how far behind the educators of other countries we have drifted, and the urgent need there is for greater earnestness if we are to make up the lee-way which has accumulated.

Mr. Reynolds, in reporting on the Education Section of the Paris Exhibit, said to his committee :—

"Of all the educational exhibits of foreign nations none is more remarkable than that from the United States of America. It is most admirable from whatever point of view it is regarded, and is the result of a well-directed policy backed by ample funds. With a view to a satisfactory representation of American education, an organiser, namely, Mr. Howard J. Rogers, of Albany, New York State, was appointed by the Government in February, 1899, and it is easy to see what a great gain has resulted from setting a competent mind to work to bring together a display which should adequately express the systems of primary, secondary, scientific, technical, artistic and university instruction in the vast territory of the Union.

"Splendid use has been made of photography, and by its means it has been possible to bring within comparatively small compass a fairly adequate bird's-eye view of the vast organisation in all its chief ramifications. The United States Government has spent more than £5,000 in its preparation, and nothing could be more satisfactory than the result. The plan has been to select five or six of the great cities east and west of the Union, and to request the superintendents of education to prepare a set of illustrations which would convey a complete view of the primary, secondary and normal educational facilities and conditions of each city. These are shown in cases of hinged frames containing some forty large photographs or other illustrations in each case. The trade school exhibits are shown separately, and so are those of the great technological institutions. In the instance of the Universities, such as Yale, Harvard, Cornell, Columbia, each has undertaken to make a special exhibit of some chief feature of its work. The net result is that the American Exhibit gives a complete view of education as seen in the States to-day, and it cannot fail to be of great educational value and inspiration not only for teachers, but for administrators engaged in the work of education.

"One of its most important and quite admirable characteristics is the fine monographs—nineteen in number—produced under the editorship of Prof. Nicholas Murray Butler, of Columbia University, New York, dealing with all phases of educational activity. They are excellent in tone, frank in criticism of their own methods, and full of the most useful suggestions. . . . . .

"It only remains to say that the American authorities have shown the most hearty good will in the matter, and the most commendable desire to promote the object the Committee had at heart in desiring this unique exhibit for display in this City."

CURRENT GEOGRAPHICAL TOPICS.

By A. J. HERBERTSON, Ph.D., F.R.G.S.

Manchuria.

MANCHURIA lies in the east of Asia in middle latitudes near the eastern coast, between the Amur and the strait of Chili (39° to 53° N.), between the Khingan mountains and the coastal range (Sikota Alin)—although politically the Yalŭ and Usuri rivers form the eastern frontier (117° to 135° E.). In position it corresponds to that part of Europe between the Baltic and the Ægean, and in area to Austria-Hungary, Bosnia, Servia, Bulgaria and Romania, or to three Britains.

The Khingan mountains on the west are the eastern escarpments of the Mongolian plateau. They rise in steep terraces above the Manchurian lowlands. The Liaŭ river, flowing to the Liaŭ gulf in the south, and the Nonni in the north, rise in these heights. The main river of Manchuria is the Sungari, which has its source in the Ever-white mountains (Changpai-shan), which form the northern frontier of Korea. This mountain is about 8,000 feet high, and its whiteness is due to the colour of the pumice of which it is composed. The pumice is found floating in the Yalu and Usuri, which both rise in this mountain. The Sungari and Nonni flow in opposite directions along the same valley line, and after their confluence turn at right angles to it, and run north-eastwards to the Amur.

The divide between the Liaŭ and the Sungari is low, so that practically a continuous undulating region stretches from the head of the Yellow Sea to the Amur. Numerous heights rise above it, the most interesting being the picturesque serrated Thousand Peaks (Chien-shan), cutting east and west across the northern continuation of the rugged heights of the Liaŭtung peninsula. Two distinct ranges emerge into one at the west end, and between them the sides are "so precipitous that they are often composed of naked perpendicular rock. But wherever a tree can grow, wherever a bush can hang, wherever a flower can lay hold, or a creeper cling, there you find vegetation, whose rich growth vies with that of the tropics, crowding every inch of soil, or peeping out of every rocky cranny."[1] White marble, black limestone, granite, both white and red, are among the useful stones, and gold, silver, copper, and very fine iron abound.

"The present dynasty has steadily forbidden gold-mining. There are two reasons . . . . one based on the belief that it is unlucky to interfere with the configuration of the Earth." The other is that "as soon as their (the miners') supply of gold ran short they went with their matchlocks to the nearest highway and helped themselves to the goods of travellers."[2]

Much of Manchuria is covered with the fertile loess. "Loess is being formed in Manchuria every day. . . . When by disintegration or attrition granite, gneiss, quartz, and basalt become fine dust, that fine dust is of the greyish-yellowy colour of loess . . . On the surface you see a coating of finely-powdered dust, which is soon blown away by a strong breeze, or washed down by the heavy rains. . . . This weathering . . . is very decided on the southern slopes, least on the northern. On this account the southern face of the hills has a long gentle slope, while the northern is, on the contrary, frequently perpendicular."[3]

The climate is one of great extremes, cold in winter, when the temperature is as low as 40° to 50° below the freezing-point at the end of January, and very hot before the rains begin in summer, reaching to 100° F. in the shade.

[1] "Manchuria," by the Rev. John Ross, *Scottish Geographical Magazine*, xi., 1895, p. 217 *et seq.*
[2] *Ibid.*
[3] *Ibid*

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From November to March the land is ice-bound, both water and land being frozen to a depth of three to four feet. South winds melt the ice in March; ploughing begins, and wheat and barley are sown. These ripen rapidly in the warm, dry, sunny days, and are reaped shortly after midsummer, and allow another crop to be planted. The rains begin towards the end of July, and are very heavy for a month, when the air clears, becomes crisp and dry again.

Millet is the chief food of the people, but much wheat is grown in the north; barley is cultivated for distilling; maize, root crops, vegetables, opium, tobacco, and many fruits are raised. Beans are used not merely for food, but for the oil expressed under great granite wheels.

The mountains, especially in the south and east, are covered with forests of deciduous trees at low levels, and coniferous ones at greater altitudes. Many trees are felled, and the logs are floated down the rivers, especially the Sungari, to the plain.

The Chinese of Manchuria are farmers in summer, and carters in winter, when transport by cart or sledge is easy over the frozen soil. In 1890, during the 100 days after Niuchwang was closed by ice, 547 carts, drawn by 2,340 animals, mostly mules and ponies, with about 1,000 tons of produce, came into the town daily.[1]

This conveyance by cart is necessary, as the rivers are rapid in this hilly land, and so not very navigable, although both Sungari and Nonni might be much more used than they are. The Russian prohibition of Chinese navigation on the Amur has probably hindered the development of inland waterways, which will be utilised when the Russian occupation of Manchuria, which seems imminent, is assured.

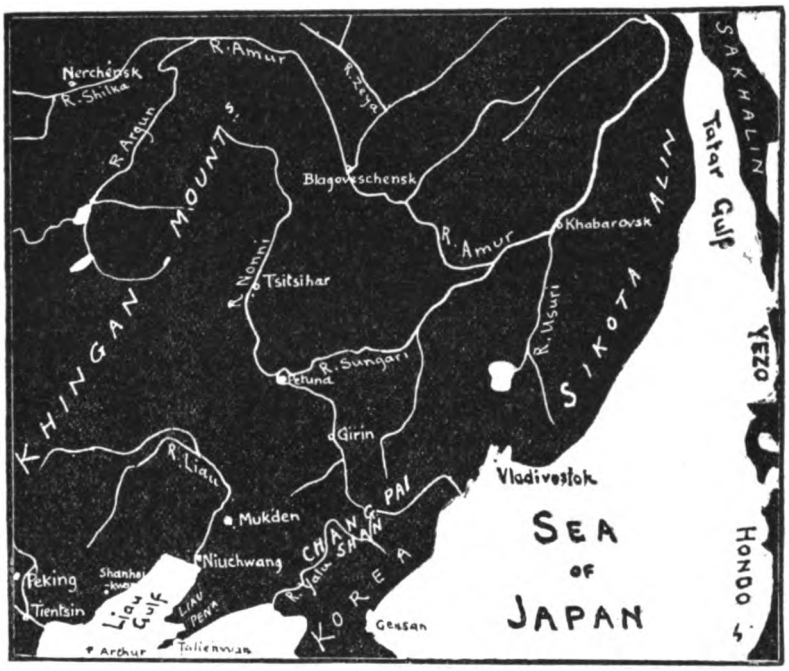
The chief port of Manchuria is Yingkoŭ, commonly called Newchwang, on the left bank of the Liaŭ, about seven miles above its mouth. The city of Niuchwang (Newchwang) is thirty-eight miles from the mouth of the river. The merchants of the port, in a memorial presented to Lord Charles Beresford when he was in China, summarise the articles of trade as follows:—*Exports*—"beans, oil, maize, millet, grain, spirits, hemp, leaf tobacco, and general produce." *Imports*—"cotton, woollen, and silk piece-goods, cotton yarn, raw cotton, kerosene oil, metals, especially iron, sugar, matches, needles, glass."[2]

The capital of Manchuria is Mukden, a city of 300,000 inhabitants, on the Hun, a tributary of the Liaŭ. Manchuria is divided into three provinces: Shen-king, capital Mukden; Girin, capital Girin (in Chinese Kilin, and often written Kirin on our maps), on the Girin tributary of the Sungari; and Helungkiang, capital Tsitsihar, or Chichihar, on the Nonni.

The route to the north runs through these towns, and the Russian railway is being built along it. From Tsitsihar the line joins the Trans-Siberian at Nerchinsk; from Girin it is being carried on to Vladivostok, and from Mukden towards Peking on the south-east, and Talienwan and Port Arthur on the south. Talienwan is a commercial port in full Russian control, and it is feared may oust Niuchwang, where British interests predominate. It may be longer free from ice than Niuchwang, but it is near the tip of a peninsula, and if differential tariffs or rates are not imposed, there is no reason why Niuchwang should fear its competition, when the port is improved.

British and Russian rivalry also shows itself in the lines east of the Liaŭ gulf. The railway being pushed northwards from Peking or Taku by Shanhaikwan is a British owned one, 4 feet 8½ inches in width; but Russia proposes to run a 5-feet gauge line from Mukden to Peking to connect with its Trans-Manchurian one.

The population of Manchuria is probably between 20 and 25 millions, more than three-quarters of them pure Chinese. Mukden is the only centre where Manchus are numerous, elsewhere they live at the head of secluded valleys, or are nomads of the steppes. Chinese immigration is constant, and has resulted in the agricultural development of the two southern provinces, for most of the northern one still remains to be broken by the plough. On the whole, the people are prosperous peasants, living on their own property. Want is felt only in times of famine or flood. The taxes are said to be the lightest in the world.



THE DEVELOPMENT OF DAY WORK IN LONDON POLYTECHNICS.[1]

THE London polytechnics, established by schemes of the Charity Commissioners, were intended primarily for the supply of instruction during the evening to artisans and others engaged in the daytime. At a very early stage in its work the attention of the London Technical Education Board was called to the fact that this arrangement caused buildings and equipment, which have been provided at the cost of hundreds of thousands of pounds, to remain unused during the whole of the day, and, in fact, to exist for the sake of two or three hours' service each evening, though they might be utilised for six or seven hours during the day in addition. The Technical Education Board

[1] "Report on Trade of Newchwang for 1890," quoted in paper "Commercial Relations with Chinese Manchuria," by A. R. Agassiz, *Geog. Jour.*, iv., 1894.

[2] "The Break-up of China." By Lord Charles Beresford. (Harper Brothers.) 1899.

[1] Adapted from the *London Technical Education Gazette*, November, 1900

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also found that it was not possible to obtain the services of the best teachers as heads of the several departments if such teachers were compelled to gain the greater part of their livelihood in other work, and only devoted two or three hours in the evening to the interests of the polytechnics in which they were employed. The Board therefore made it part of its policy to encourage the engagement by the polytechnics of an educational principal and of the heads of the principal educational departments of the institutions for their whole time, and to develop day classes for boys and girls, or young men and young women who have not yet entered upon the regular business of life.

The same policy has been adopted by the authorities of the East London Technical College, at the People's Palace, where there is a day school for boys, in which special attention is given to preparation for the engineering and chemical industries of the district. There is also a day college for young men preparing for the same skilled industries.

In the South-Western Polytechnic at Chelsea there is a secondary day school for boys and girls, in addition to the domestic economy school for girls; there is also a day college for young men, in which special attention is devoted to electrical and mechanical engineering, and a day college for young women mainly devoted to commercial subjects. The result of the establishment of these day departments is that in this polytechnic the total amount of work done during the day, as measured by the number of students multiplied by the average number of hours during which they attend, considerably exceeds the total amount of work carried on in the evening, as measured by the same standard; and the utility of the premises and the equipment is thus more than doubled.

In the Regent Street Polytechnic there are day schools for boys and for girls. There are special schools for young men in engineering, in architecture and building construction, and in carriage building, and a largely-attended commercial school. These departments of the Polytechnic utilise to the full the educational facilities of the institution during the whole of the working day.

At the Battersea Polytechnic there is a secondary school of the type of a School of Science, and a technical day school for boys entering the building trades or the engineering trades. There is also a special department of technical chemistry for day students who are intending to enter the chemical industries of the district, and a domestic economy day-school and training school for domestic economy teachers.

The Borough Polytechnic, the Northern Polytechnic and the Woolwich Polytechnic have each their day schools, and the Borough Polytechnic has also classes in baking and confectionery and, at its branch institute at Bermondsey, in leather tanning and dyeing. All these polytechnics, as well as the Northampton Institute, have day domestic economy schools.

In all the polytechnics the art departments are open during the day, in much the same way as the recognised schools of art.

A new departure has been made recently at the Northampton Institute by the establishment of a day college for mechanical and electrical engineering, including as a special branch of mechanical engineering the science and practice of horology, and, in accordance with the precedent of the London Technical Education Board, a grant of £500 towards the cost of the conduct of this new departure has been promised for the current session.

ALL nations are learning that their commercial and industrial prosperity in the future depends on their methods of educating the whole nation. Leaders are indispensable to national greatness, more indispensable than ever before; but a few great men acting alone cannot save a nation; they must have behind them an alert, well-educated, resourceful people.—James Baker.

CAMBRIDGE LOCAL EXAMINATIONS. SET SUBJECTS FOR 1901.

THE regulations for the Senior, Junior and Preliminary Cambridge Local Examinations for December, 1901, have now been published. The special subjects prescribed are as follows:

Preliminary.

Religious Knowledge.—(*a*) St. Matthew i.-xiii., (*b*) Joshua i.-xii.
English Author.—Defoe, "Robinson Crusoe," Part I.
English History.—Outlines, 1688-1815 A.D.
Geography.—Great Britain.
Elementary Latin.—Cæsar, De Bello Gallico, VII., chaps. 1-36 (omitting 23); or from Nepos, "Lives of Aristides, Cimon, Miltiades, Pausanius, Themistocles."
Elementary French.—Enault, "Le Chien du Capitaine," chaps. 1-5.
Elementary German.—Hauff, "Der Scheik von Alessandria und seine Sklaven (Der Zwerg Nase)."

Junior.

Religious Knowledge.—(*a*) Joshua i.-xii., xxii.-xxiv., Judges i.-xii.; (*b*) St. Matthew; (*c*) Acts of the Apostles i.-xvi.
English.—Shakespeare, "Henry V."; Scott, "Lay of the Last Minstrel."
English History.—1688-1832 A.D.
Roman History.—540 B.C.-266 B.C.
Geography.—Great Britain and Ireland and Asia.
Latin.—One of—Cæsar, De Bello Gallico, VII., 1-67; Cicero, In Catilinam, I.-III.; Virgil, Æneid, IX.
Greek.—Xenophon, Anabasis, VI.; or, Euripides, Heracleidae (omitting lines 353-80, 608-29, 748-83, 892-927).
French.—Enault, "Le Chien du Capitaine"; or, De Vigny, "La Canne de Jonc."
German.—Hauff, "Der Scheik von Alessandria und seine Sklaven"; or, Freytag, "Die Journalisten."
Spanish.—Galdós, "Zaragoza," chaps. 1-13.

Senior.

Religious Knowledge.—(*a*) Joshua i.-xii., xxii.-xxiv., Judges i. xii.; (*b*) St. Matthew; (*c*) Epistles to Timothy and Titus.
English History.—1688-1832 A.D.
Greek History.—431 B.C.-359 B.C.
Roman History.—510 B.C.-266 B.C.
Geography.—Great Britain and Ireland and Asia.
Shakespeare.—"Henry V."
Spenser.—"Faerie Queene," Book I.
Latin.—Virgil, Æneid, IX.; Horace, Odes, III.; Livy, I., 1-41; Cicero, In Catilinam, I.-IV.
Greek.—Homer, Iliad, XI.; Euripides, Heracleidae; Thucydides, VI., 1-51; Plato, Crito and Euthyphro. (Students must select one verse and one prose subject.)
French.—Molière, "Les Précieuses Ridicules," and De Vigny, "La Canne de Jonc."
German.—Freytag, "Die Journalisten," and Riehl, "Die Ganerben," and "Die Gerechtigkeit Gottes."
Spanish.—Galdós, "Zaragoza," and Cervantes, "El Cautivo."

In French and German in the Preliminary Examination candidates will in future be allowed to take unprepared translation in place of the set-book.

Changes have been made in the conditions for passing in the Natural Science Section in the case both of the Junior and Senior Examinations. Junior candidates may now offer Electricity and Magnetism.

Questions on Commercial Arithmetic will no longer be included in the paper on Book-keeping in the Junior Examination.

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THE LATEST EDUCATIONAL REPORT.

THE last Report issued by the Board of Education is that of Mr. James Baker on "Technical and Commercial Education in East Prussia, Poland, Galicia, Silesia, and Bohemia." Mr. Baker undertook the journey through the countries named in the title of his report, at the request of the Board of Education, with the special object of observing, from the point of view of one generally interested in the development of British industry and commerce, the progress of technical and commercial education abroad. The general opinions at which Mr. Baker has arrived are of considerable value, since they are likely to do more to convince the British manufacturer and merchant than would the conclusions of a mere student of pedagogics.

We heartily agree with the report that future success in commerce "will lie with the people, and one necessary part of national education is that which brings the most advanced technical skill and knowledge to bear upon all forms of industry and commerce." In the technical and continuation schools of most English cities and towns we are "hatching mainly clerks, and clerks, also, with too little command of foreign tongues."

One root difference between English methods in technical education and those in vogue on the Continent "lies in the fact that in England matters are left to casual supply or to local effort, whilst abroad the highly organised central Government prescribes and compels united effort towards a clearly formulated aim." Much has happily been done by our local authorities to provide better facilities for technical education for working men and women, but too many of our artisans still learn their trade, solely in the workshop, thus failing to secure scientific grounding, or artistic advancement, or diversity of practice. Can such a system stand against the thoroughly scientific and artistic instruction of a whole people such as is described in this report, plus the actual practice in the workshop?

The report dwells upon the circumstance that we do not make enough as a nation of the advantage which the absence of compulsory military duty gives to our artisans. With the clear gain of two years which this ensures him, the English workman would have no difficulty in holding his own easily if only he were as satisfactorily and as suitably educated as his foreign contemporary. Or, to quote Mr. Baker: "Herein is the Englishman's opportunity when he obtains the same advantages of education as the Austrian or German; he can at once leap ahead of his continental competitor."

Referring to the well-known clause in the Technical Instruction Act, that "Technical education shall not include teaching the practice of any trade or industry or employment," Mr. Baker says, "On the other hand, in these days workshop practice *alone* is not sufficient, and *in that sense*, the Austrians have for twenty years past decided that trades cannot be taught without a school. The German Government has come to the same decision, and a vast army of highly cultured artisans and highly trained commercial workers is being produced in both these countries and in others."

Of course, most of these things have been said before, but rarely with more ability than they are here expressed. It is for those of us who see what is necessary to save our position in the commercial world to repeat in season and out of it what an examination of the schools and methods of foreign lands makes abundantly evident—that trained intelligence, and that alone, will tell in the industrial conflicts of the future.

We hope to take an early opportunity of dealing more in detail with the work in some of the schools visited by Mr. Baker.

ITEMS OF INTEREST.

GENERAL.

WE begin this month a series of articles by Mr. J. A. Nicklin on various subjects set for 1901 in important English literature examinations. This month he deals with Shakespeare's "Henry V.," which, as our readers will know, is set for exact and detailed study—to use the official expression—for the examinations of the Board of Education for teachers' certificates. It is also prescribed for the local examinations of the Universities of Oxford and Cambridge, and for those of the College of Preceptors. Mr. Nicklin has also prepared special articles on the other subjects of English literature set for the Teachers' Certificate Examination, 1901. These will appear month by month till finished.

READERS of these columns may remember that they have always been cautioned against putting much trust in the proposed reforms of French syntax. It is now asserted that the Ministerial circular will be withdrawn, owing to the opposition of the Académie. Be this as it may, we know from a letter of M. Gaston Boissier, Secretary to the Académie, that the Council of Education is engaged in considering the "Observations" of the Académie. It appears that the Académie intends to settle the whole matter. Much change, therefore, cannot be expected. Such a sweeping innovation as abolishing the agreement of past participles is not likely to be sanctioned by the Académie. Richelieu's celebrated society is, and perhaps justly, conservative, and is inclined to pay more attention to simple theories than to the results of research. Many extraordinary subtleties common to French grammars are due almost as much to deductions drawn from contradictory instances given in the "Dictionnaire" as to the hair-splitting of grammarians. These four examples from the "Remarques" (1647) of Vaugelas, a prominent member of the Académie at that time, specially pensioned by Richelieu to collaborate with the Editors of the Dictionary, will serve to show how distinctions without a difference have been maintained for hundreds of years:—

> Le peu d'affection qu'il m'a tesmoigné.
> Ce peu de mots ne sont que pour. . .
> Ce peu d'exemples suffira.
> Sa clemence et sa douceur estait incomparable.

WHEN teachers criticise examination papers, there is always a suspicion that they do not know their own business. We think, however, that the French paper set by the Civil Service Commissioners at the recent examination for entrance to Sandhurst does call for a word of protest. Its chief and most malignant defect is an idiomatic extract from "The Pickwick Papers to be rendered into French. For students under twenty Dickens is not a fair author for unseen translation, and except as a *tour de force* we doubt if he ever repays the time spent on him. That Frenchmen themselves find difficulty in translating him is well known to readers of the orange-coloured French editions. The aim of the examiner should be assuredly to bring the best candidates out at the top of the list. Is this likely to take place where a superficial boy with a knowledge of conversational idiom and slang would gain so many more marks than the student well read in history and literature? In the questions on grammar and literature we note that one of the questions asks for the subject of Voltaire's "La Henriade." Surely a work could have been chosen which the candidates would be likely to know at first hand, and not one whose merits they have merely learnt up from their text-book.

THE Consultative Committee have actually begun to consider the important subject of the registration of teachers. There is

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probably no question on which ordinary schoolmasters and mistresses have exhibited more enthusiasm; and, with them, we shall look forward with interest, and some anxiety, to see what the united wisdom of this official body recommends.

THE President of the Board of Education has appointed a committee to consider the best means for co-ordinating the technological work of the Board of Education with that at present carried on by other educational organisations. The committee is composed of: Sir William de W. Abney, K.C.B., F.R.S. (Chairman), Sir Philip Magnus, Sir Swire Smith, Mr. G. R. Redgrave, Mr. W. Bousfield, Mr. W. Vibart Dixon, with Mr. A. E. Cooper, Board of Education, South Kensington, as Secretary.

THE Board of Education has decided to open the Exhibition of Modern Illustration on Monday, January 7th next, in the galleries of the Indian section of the Victoria and Albert Museum, South Kensington. A private view will be held on Saturday, January 5th.

THE annual meeting of the Geographical Association will be held at the College of Preceptors, Bloomsbury Square, on Wednesday, January 9th, at 3 p.m. At 3.15 the President, Mr. Douglas Freshfield, will show for the first time the views recently taken by him in the Sikhim and Nepalese Himalayas. At 3.45, Mr. T. G. Rooper, M.A., one of her Majesty's Inspectors of Schools, will deliver a lecture on Practical Geography in Schools.

THE Annual General Meeting of the Incorporated Association of Headmasters will be held at the Guildhall, London, E.C., on January 9th and 10th, 1901. A service will be held, by permission of the rector, at the church of St. Lawrence, Jewry, E.C., on the morning of January 10th, on which occasion it is hoped that the Lord Bishop of Southwell will preach. The usual dinner will be held at the Trocadero on the evening of January 9th.

THE third winter meeting for teachers will take place at the College of Preceptors during the first fortnight of January. The programme which has been arranged includes lectures on general principles of education and on methods of teaching certain selected subjects. There will be exhibits of educational apparatus, and visits will be paid to typical schools and colleges in London. Tickets can be obtained at half-price (7s. 6d. for the whole meeting) by members of all important teachers' societies. Application should be made to the Secretary at the College.

FOR the third time a conference of science teachers in connection with the Technical Education Board of the London County Council has been arranged. The meetings will take place on January 10th and 11th at the Chelsea Polytechnic, Manresa Road, S.W. Among the subjects which will be discussed may be mentioned: "Science teaching in Girls' Schools," "Nature Study for Children," "The Fitting-up of Laboratories" and "Instrument-making." The conference of last January was so successful that we have no doubt the meetings will be largely attended and the discussions well maintained.

GERMAN education is to be still further modernised. The German Emperor has issued an edict giving his consent to more reforms in the higher school of Prussia. The changes to be introduced are a continuation of the policy initiated in 1892. Modern subjects are to be still more exalted. The general education received in the Gymnasium, the Realgymnasium and the Oberrealschule is to be regarded of the same value. In other words, the privileges of the two latter grades of school are to be extended. The recognition of this equality will in no way interfere with the development of the peculiarities of the three kinds of education, and no objection is raised to increasing the amount of Latin in the first two kinds of schools. But for the future English is to be an alternative subject for Greek in all classes except the three highest of all schools.

NOR does this exhaust the importance attached to English. Where the local conditions are favourable to the alteration, English is to take the place of French as a compulsory subject in the three highest classes, but French is still to be retained as a voluntary subject where the change is made. More attention is to be given to the cultivation of conversational powers in teaching English and French. Stress is to be laid upon the teaching of geography and modern German history, and the "leaving certificate," which has hitherto exempted from one year's compulsory military service, has been abolished. Finally, school authorities are instructed to give the greatest attention to physical culture. Such are, in brief, the most important points of this edict, which is, however, of so much importance to German education that we hope to deal with it more fully in our next number.

FOR some reason it seems to be a rule that there shall be about five times as many women as men at every open meeting to discuss educational questions. It is said that women are more interested in the problems of education than men. Whatever the reason may be, there was the same large preponderance of women at the meeting of the Metropolitan Section of the Teachers' Guild at the North London Collegiate School for Girls on December 7th. The Hon. E. Lyulph Stanley gave an address on "The Government's Secondary Education Bill." It is to be hoped that the secondary teachers present took to heart some of the things Mr. Stanley had to say. The reasons given why School Boards should have a substantial representation on local authorities for secondary education were sound and irrefutable. Teachers were told, too, that the persons interested in education who should be co-opted on the local authority ought not all to be acting teachers; there are plenty of able persons in most centres with broad, useful views on education who might very wisely be co-opted. We have no space to refer to all the questions discussed, but we must express our regret that so few of the men prominent in secondary education in London were able to be present.

MR. BRYCE, too, speaking at Bradford on November 30th, urged that no definite line can be drawn between elementary and secondary education, and advised the Government, if they wished to take the line of least resistance, to adopt the plan advocated by the last Commission on Secondary Education. In other words, one-third of the representation on the new local authorities should be given to School Boards, one-third to the municipal authority, and one-third to other sources.

JUDGMENT was deferred in the important case Regina *v.* Cockerton. Justices Wills and Kennedy are taking time to consider whether or not School Boards may draw upon the rates for higher education. As our readers will know very well, the decision arrived at in this case is bound to have a profound influence upon the class of schools known as higher-grade schools. There is something a little ridiculous in the fact that the legality of this part of the work of the large School Boards up and down the country should be raised now for the first time, seeing that it has been carried on for at least the last twenty-two years. Of the value of these schools to the children of working men there can be no doubt. And though little is heard in London or the South of England of the case which has

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yet to be decided, it is a subject in which, in the Midlands and in the great towns of the North, your "man in the street" is interested.

SPEAKING to the Yorkshire Association for the Promotion of Commercial Education at their last meeting, Mr. P. E. Hemelryk, Vice-president of the Liverpool Chamber of Commerce, gave it as his opinion that a student entering a commercial school should know at least two foreign modern languages, and be sufficiently advanced in general knowledge to be able to familiarise himself with the special commercial terms, the customs and laws, as well as the peculiarities of the trade of any country the language of which he is studying. We do not know at what age the Vice-president of the Liverpool Chamber of Commerce would have boys enter the commercial school, but since he would wish them spend two or three years in such a school, and two more in a commercial "bureau," the age at which the secondary school should be left would have to be fairly young. Consequently, we think Mr. Hemelryk expects a great deal too much, and we cannot help thinking that if the advocates of commercial education would first acquaint themselves with what can fairly be done in the years of school life, they would be better able to build up a rational and workable scheme of commercial work for youths who will enter upon business careers.

THE Association of School Boards have adopted a scheme of examinations in commercial knowledge. Their executive committee have decided:—(1) That, commencing with next spring, a series of examinations in the following subjects be established by the Association:—(*a*) Languages: English, French, German and Spanish. (*b*) Business subjects: Book-keeping, shorthand, commercial arithmetic, and commercial geography. (2) In connection with the language examinations a system of local *viva voce* tests be arranged in addition to the written papers, (3) That the charge be 1s. per paper. (4) That the examiners be appointed by the executive of the Association, local arrangements being made for the *viva voce* examinations being held by the local authorities, acting under the support of the Association. (5) That certificates of proficiency, a few bronze medals, and money prizes be offered annually. (6) That the whole scheme be laid immediately before the School Boards, and that they be asked to make arrangements in their different localities for the appointment of committees to take charge of the question papers, to superintend the examinations, and generally to assist the officers of the Association in carrying out the scheme. The first examination will be held in March next.

AFTER conferring together, the Technical Education Board of the London County Council and the School Management Committee of the London School Board have decided upon a series of resolutions which have been adopted by the full boards. It has been agreed:—(1) That a delegacy be created for the conduct of examinations within the County of London, and that the delegacy be called the "Metropolitan Examinations Delegacy." (2) That the Metropolitan Examinations Delegacy be composed at the outset of an equal [6] number of representatives of the School Board for London and of the Technical Education Board of the London County Council, and that the Clerk of the School Board for London and the Secretary of the Technical Education Board, be joint honorary secretaries. (3) That both the School Board and the Technical Education Board of the London County Council be invited to entrust to the Metropolitan Examinations Delegacy the conduct of such examinations as they may think advisable. (4) That the Metropolitan Examinations Delegacy have power to conduct examinations for scholarships awarded by any public bodies, trustees, or other persons within the County of London. (5) That, in the event of any such awarding body desiring to be represented upon the Metropolitan Examinations Delegacy, it be open to the delegacy at its discretion to grant such representation. (6) That it be the duty of the Metropolitan Examinations Delegacy to appoint superintendents, and, when necessary, professional examiners, who must in no case be members of the delegacy. (7) That the Metropolitan Examinations Delegacy do appoint a Secretary who will be responsible for all arrangements for examinations, including, when necessary, the distribution among the professional examiners of the work of setting examination papers, examining the candidates' work, and reporting thereon.

THE Board of Education issued their first report as we were going to press with our last number, but we take the first opportunity of calling attention to some of its many points of interest. The report consists of three volumes; the first contains the general report of the Board, the second deals entirely with secondary education, and the third wholly with elementary instruction. It is difficult to imagine what idea a foreign student of education would obtain of English secondary education if his only source of information were these official blue-books. Both in the section of the general report concerned with secondary education, as well as in the second volume entitled "Appendix to Report (Secondary Education)" the only forms of secondary education which are seriously dealt with are instruction in science and art. Judging by this report, a foreign educationist might well decide that the Board of Education have no official connection with what is usually called secondary education.

THE reports of the Inspectors for Science in connection with the South Kensington branch of the Board of Education are full of suggestive material for teachers of science and for committees responsible for the administration of schools in connection with the Board. Reporting on the question of the co-ordination of the work of the different educational authorities in a town, the Senior Chief Inspector sketches what might with advantage be the relations of the various schools. Mr. Redgrave says:—"It would appear to be of advantage that the Technical School under the Town Council should be a day school for students who have passed through a course of two or three years in a School of Science, which might be conducted by the School Board, and who may desire to qualify themselves for good positions in industrial or commercial pursuits. The School of Science managed by the School Board would in such a case be the preparatory school for the Technical School, but it would also furnish an education complete in itself for those who would leave school at the age of 15 or 16. The evening classes at the Technical School should be classes in connection with the Board, or with the City and Guilds of London Institute, while the evening classes under the School Board should in all cases be those of the Evening Continuation School, and students should be encouraged to prepare for the classes under the Technical Instruction Committee by a course of study in the Evening Continuation School."

MR. HAROLD WAGER, who reports on the Yorkshire district, raises a subject on which most science masters in secondary schools have very definite views. More than one headmaster imagines that the only time required for the proper teaching of science is that specified on the school time-table, and if judged by that standard the science master is free, the headmaster considers him available for mathematical or other teaching. To such we commend Mr. Wager's words:—"The governors or managers of many of these schools have not yet fully appreciated the fact that teachers of practical science subjects require a considerable amount of time for the preparation of the experiments for their lessons beyond the time actually

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devoted to teaching. The necessary preparation for a good practical lesson in the laboratory is no light task, and if the work is to be done properly the teacher must have time for it."

TAKING these reports by the inspectors as a whole, it is very evident there has been a decided improvement in the teaching of science and art throughout the country. From every district comes information of improved equipment, better teaching and more enthusiasm. It is beginning to be more and more recognised that to be in any way educative science must be taught in a practical manner. And in addition, it is now understood that the best results, in the highest sense, can only be secured when provision is made for all students to themselves experiment. It is true that this kind of teaching is comparatively costly. But to secure British supremacy in other directions no expense has been spared. Some day it will be admitted by everybody that all sensible expenditure on education is worth while.

SIR HENRY CRAIK presided at the last annual gathering of students and friends of Queen's College, London, and delivered an address on the higher education of women. Amongst other subjects Sir Henry referred to competitive examinations, and said he believed that the new generation would look back upon this as having subordinated everything to the mad race of competitive examinations. One of the earlier traditions of Queen's College was to resist the overstrained tendency to competitive examination, and, maintaining the courage of its opinions, the college has not fallen in with views which seem to hold that knowledge is only valuable when it has a distinct hall-mark to signalise it.

THE December Cambridge Local Examinations were held at 263 centres in the United Kingdom and the Colonies. The total number of candidates (16,254) is larger than in any previous year. The entries were distributed among the various examinations as follows:—Seniors, 2,287; Juniors, 8,377; Preliminary, 5,580; 9,757 of the candidates were boys, and 6,487 girls. The numbers given above include 1,257 candidates at centres not in the United Kingdom. Nine of these centres are in the West Indies, five in Ceylon, three in the Straits Settlements; the remaining centres being Bermuda, British Columbia, British Guiana, Mauritius, Shanghai, and Valparaiso. The Higher Local Examination (212 candidates) was held contemporaneously at certain Home centres.

THE following is an analysis of the entries for certain subjects in the Junior Examination. All candidates must take up arithmetic and dictation. The following subjects are selected by at least 90 per cent. of the candidates:—Religious Knowledge, English Grammar (including Composition), English History, Geography and French; In English Literature (Shakespeare or Scott) the entries have increased since last year from 80 to 90 per cent. Euclid and Algebra are taken by more than 94 per cent. of the boys, and 37 per cent of the girls, Latin by 56 per cent. of the boys and 10 per cent. of the girls, German by 6 per cent. of the boys and 10 per cent. of the girls, Greek by 5 per cent. of the boys. About 42 per cent. have selected one or more of the nine distinct subjects in Natural Science, and there is an increase this year in the entries for Experimental Science, Theoretical and Practical Chemistry, and Heat. For Drawing over 60 per cent. of the candidates enter, for Music 11 per cent., for Book-keeping 8 per cent., for Shorthand 4 per cent. The percentages entering for the various subjects in the Senior Examination agree in the main with the above. The Regulations for 1901 can be obtained from Dr. Keynes, Syndicate Buildings, Cambridge, or from the local secretaries at the various centres of examination. Changes have been made in the conditions for passing in the Natural Science section of the Senior and Junior Examinations, and in French and German the option of taking unprepared translation in place of a set book has been extended to the Preliminary Examination.

WHAT, if any, military training should be given in secondary schools? is a question which is, naturally enough, receiving considerable attention from schoolmasters and others just now. It will probably be remembered that the Incorporated Association of Headmasters, at their general meeting last June, appointed a committee to communicate with the War Office with a view to encourage schools to take their part in the system of national defence, and the War Office consented to receive a deputation. One of the most recent utterances on the subject was the lecture delivered by the Rev. C. G. Gull, Headmaster of the Grocers' Company's School, at the United Service Institution. Mr. Gull says that boys do not find drill irksome, and this partly because they pick up routine work more quickly than men, and partly because they enjoy the precision of the work. The imagination of the boys, too, catches the military ideal, a result which Mr. Gull finds helps very much in the mastery of drill. But there is great diversity of opinion on several aspects of the question, and we should be glad to open our correspondence columns to brief accounts of actual experience of military instruction.

THE "London University Guide" for the year 1900-1901, published by the University Correspondence College, contains, we should think, an answer to every question likely to present itself to the external student anxious to obtain a degree at the London University. The volume, which runs to nearly 300 pp., gives full information as to what to read, and where to read it, for every examination of the university for which the college prepares candidates.

IN a valuable leaderette entitled "The Education of Educators," the *British Medical Journal* recently called attention to the inestimable value to teachers of a working knowledge of physiology. Several instances were quoted in which definite physical ills had been mistaken for moral delinquencies. "It has been said, somewhat dogmatically perhaps, that if we knew everything we should forgive everything. And it may equally well be said that if we knew everything we should actually punish the ordinary child little or not at all." The demands upon teachers are already numerous enough, it is true, but if they will bear these sentences in mind they may be saved—what nobody would regret more than themselves—the infliction of punishment for what their pupils are in no way to blame.

THE November number of the *London Technical Education Gazette* contains detailed information of numerous scholarships and exhibitions to be awarded by the Board next year. In July seventy intermediate county and twenty intermediate scholarships are to be competed for by boys and girls under sixteen years of age, and five senior county scholarships by young men and women under twenty-two years of age. In April the Board will proceed to award not more than a hundred junior artisan evening Art exhibitions, not more than thirty Art scholarships, and not more than thirty Schools of Art scholarships. In June some two hundred evening exhibitions in Science and Technology will be competed for. These exhibitions are of two classes: half of them are for students who have attended evening continuation schools for two years, and half for students who merely satisfy the Board's requirements as to income and residence. In addition to this there are scholarships and exhibitions in horticulture, practical gardening, domestic economy, and cookery. It would seem that the Board are determined to catch any potential Davy or Faraday who

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may happen to have been born within the metropolitan area. In any case it is abundantly evident that no boy or girl of ability who is anxious to study science or art need be prevented by want of means.

A GREAT future should be in store for Cirencester Grammar School. The Technical Instruction Committee of the Gloucester County Council have decided that this school shall become one of their centres for providing technical as well as secondary education. A suite of new buildings is almost complete, and the rooms are to be furnished as soon as possible. Classes, to be open to students from neighbouring villages, are to be started in science, commercial, art, and manual subjects, and special attention will, we understand, be given to agricultural subjects. The cost of the new buildings has been divided between the Gloucester County Council, the Urban District Council of Cirencester, the endowment of the school and private donations.

MATRICULATED students of the University of Durham who have attended for two sessions the lectures and classes of the College of Science at Newcastle-on-Tyne, and have passed an elementary examination in three or four branches of science, as well as a more advanced examination in any two of these subjects, receive the diploma of Associate in Science of the University of Durham. This is, we believe, the only university title of Associate in Science. Fuller information will be found in the last calendar of the Durham College of Science, as well as much interesting particulars of numerous scholarships and prizes open to students.

THE recent decision of the Corporation of the City of London not to establish at present a commercial school or college has met with considerable adverse criticism in many quarters, a fact which has called forth a long letter to *The Times* from Mr. T. A. Organ, the chairman of the Technical Education Board of the London County Council. In this letter Mr. Organ reviews the recommendations of a special committee appointed by his Board over which he presided for more than a year. These recommendations were printed in THE SCHOOL WORLD of March, 1900. Certain of the resolutions of this committee have since become accomplished facts; the Commercial side at University College School, over which Mr. A. Kahn has been placed, may be cited as an example. When to the work in secondary schools is added that done by the School Board in their special higher elementary schools, and that so admirably accomplished in the London School of Economics, it becomes clear that the work which a new commercial school would be called upon to perform is being satisfactorily done already. There has been too much over-lapping in English education in times past, and we think the decision of the Corporation a wise one, so far as present needs are concerned.

THE report of the Commissioner of Education, Dr. William T. Harris, to the Secretary of the Interior on the work of the United States Bureau of Education for the year 1898-99 (volume I.) has now been published. It is a large volume of some 1,248 pages, and is, like all its predecessors, brimful of valuable and interesting matter. The volume is in no sense confined to American education. The officers of the Bureau would seem to have searched the four quarters of the earth for information likely to be of use to American teachers. But the question will obtrude itself—When do American teachers get time to acquaint themselves with the contents of volumes of this size? We hope to take an early opportunity of referring to some of the valuable articles here brought together.

TEACHERS of Botany will be glad to learn that Messrs. James Backhouse & Son, Ltd., the well-known nurserymen of York, have arranged a special scientific department, the object of which is to supply suitable material for practical work in botany. This part of their business Messrs. Backhouse have placed in charge of Dr. A. H. Burt, who has an expert's knowledge of teachers' requirements; and when it is borne in mind that orders may be sent by telegram, it only being necessary to specify the text-book in use in the class and the chapter for which material is required, it will be seen that every means has been taken to make practical instruction easy.

WITH a view to extending an interest in the work and objects of the Childhood Society among teachers, its Council have decided to offer two prizes for the two best essays on prescribed subjects. Full particulars of the competition can be obtained from the Hon. Sec. of the Society, at Parkes Museum, Margaret Street, London.

MR. P. A. BARNETT'S chapter on the "Discipline of Character," in his "Common-sense in Education," which has already reached a third edition in England, has been translated into Russian by M. Pobiedonostzeff, the High Procurator of the Russian Holy Synod. The translation is for distribution to Russian schools.

The School Calendar (Whittaker) begins with the events of July, 1900, yet its preface is dated September, 1900, and copies were not obtainable until the end of November of the same year. The publication, which is in its fourteenth year of publication, is so useful that these vagaries in the dates with which it is concerned, and of its appearance, are much to be regretted.

THE Civil Service Commissioners announce that an open competitive examination for not fewer than ten situations as Assistant Surveyor of Taxes in the Inland Revenue Department will be held in London, Edinburgh and Dublin, commencing on January 29th, 1901. The limits of age for these situations are 19 and 22. The examination will be in the following subjects:—Arithmetic; English composition, including orthography and handwriting; geography; book-keeping by double entry; translation from and into *any one* of the following languages, viz., French, German or Latin; Euclid, Books I. to IV., and VI.; algebra; and political economy. A fee of £6 will be required from each candidate attending the examination. Application for permission to attend the examination must be made, on or before January 10th, to the Secretary, Civil Service Commission, S.W., on forms obtainable from him. The existing scale of salaries in the Tax Surveying Branch of the Inland Revenue Department is as follows, viz.:—Assistant Surveyors, £100 a year, rising by annual increments of £10 to £180; Surveyors, 4th class, £200-£380; 3rd class, £430-£550; 2nd class, £600, and 1st class, £650.

WELSH.

WE are glad to hear that Principal Viriamu Jones is restored to health. It is a matter for general congratulation to the cause of Welsh education and to the University College of South Wales especially. Principal Jones has brought a convincing statement before the Town Council of Cardiff as to the value of a college in a large town. He showed that nearly £2,000 (including Queen's Scholarships) fell to Cardiff people, and that the college had spent over £200,000 in the town. He, therefore, pleaded that the Town Council should make a free grant of a plot of land in Cathays Park for new college buildings, which are sorely needed for the work of the college. At a later meeting of the Town Council, a resolution was passed acceding to the request for the site, which is valued at nearly £20,000. It is stated that £150,000 would be required

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to provide the college with buildings adequate to its needs. Towards this sum £50,000 has been raised, including the magnificent gift of £10,000 from the Drapers' Company. Both Principal Jones and the Town Council are to be congratulated on their public spirit in securing a suitable site for an institution of such incalculable benefit for both Cardiff and the populous district around it. It now behoves Cardiff to make the building worthy of the site.

WALES is patriotic, and its University system is democratic in many ways. There is therefore nothing to be surprised at in the nationalistic colouring which attends meetings of the Court. The position of the history of Wales is not, in the opinion of some members of the Court, sufficiently prominent in the academic circle of studies. As one speaker said, "The colleges could never satisfy national aspirations if they did not show a desire to cultivate a knowledge of the historical past which justified their being called a nation." The reply is made that there are no text-books. This was answered by saying, "Let the Court take a strong stand upon this question, and the necessary text-books would soon be forthcoming." Now the debate arose with especial regard to the Matriculation Examination which is supposed to be taken by pupils in schools before entering the colleges. One speaker made the very reasonable suggestion that, since this was a question of the practical work of teachers, it would be an advantage to have a conference on the subject between the staff of the University and the teachers in the intermediate schools. But this suggestion does not seem to have found any favour, and eventually the Senate of the University (*i.e.*, the heads of departments of study in each of the colleges) were instructed to prepare a detailed syllabus. In other words, the theory is that professors in the colleges with experience in teaching older students are to legislate for school-teachers.

ON the subject of Welsh history, no one is a greater authority than Mr. Owen M. Edwards. He has lately spoken with much warmth on the absence of its adequate teaching in Wales. He says: "Our chronicles and laws are exceedingly interesting to the student, and I know of nothing more serviceable to stimulate that curiosity which sharpens the intellect of youths when they realise that they make discoveries on their own account. I do not know of any history in regard to which it is easier for the student to obtain interesting charters and statutes to illustrate its period of growth." And so on—all in that spirit of patriotic research which everyone so highly respects and admires in Mr. Edwards. But on this very account such utterances have their danger. Mr. Edwards goes on to say: "It will long be remembered how an attempt was made to exclude it from the first examination of the University. Ever since then my love for the University of my country, like many another Welshman's love for it, has grown cool." We must assume that Mr. Edwards refers to later and academic studies when he urges the study of original documents. But neither have school teachers the leisure for such studies nor boys and girls the ability to make them, and it will be a pity if Mr. Edwards' authority is quoted largely as applying to schools. What would be the harm of a conference with school teachers, with a view to seeing what can be done by them? The imposition of a syllabus by the University Senate and Court will not alter their ability or inability to deal with the matter; but should such a syllabus be unworkable, it will not altogether unreasonably provoke their resentment in not being consulted.

IT is announced that the total number of students registered to date in the University of Wales is 1,025. In 1897, 15 qualified for degrees; in 1898, 38; in 1899, 70; and in 1900, 102.

SCOTTISH.

SPECIAL attention is directed to the following points in the recent report of the Scotch Education Department on the Examinations for Leaving Certificates:—(1) Candidates are frequently sent in for the lower grade at too early an age. The bad effect of this is twofold. It inevitably entails many failures and disappointments, and it causes a number of ordinary pupils to attempt the higher-grade paper before the normal close of the school curriculum. (2) In a fully equipped and organised secondary school all the pupils of the upper classes should aim at the higher certificate. (3) The honours certificates are meant to be a recognition of exceptional ability in individual pupils, and consequently the number obtaining such certificates may vary greatly from year to year. (4) Unless the conditions are similar, mere numerical comparisons between one school and another in regard to the number of certificates gained may be quite misleading, and may foster an undue competition that involves grave dangers. (5) Their lordships strongly deprecate the tendency to gauge the quality of the teaching in a school by the number of honours certificates gained by the pupils.

THE annual general meeting of the Association of Teachers in Secondary Schools in Scotland was held in the Royal High School, Edinburgh, Herr Gustav Hein, retiring president, in the chair. Herr Hein, in his retiring address, said that Lord Balfour's Higher Education Bill was a most statesmanlike and straightforward attempt to bring order into the chaotic state of secondary education in Scotland. The Association has for years insisted on getting a Bill for Secondary Education passed, and the members must use their best efforts to further the passing of Lord Balfour's measure this session. In regard to the recent alterations and innovations in the Leaving Certificate examinations, Herr Hein said that they are all in the direction of the views repeatedly laid before the Department by the Association

FIRST of all, the long-wished-for Group Certificate has been introduced, and it should no longer be possible for pupils to pose as possessing a Leaving Certificate when in reality they have only passed in one subject in the lower grade. The leaving certificates will never fulfil their true function until they are in *fact* what they are in name, viz., certificates to be issued to pupils on finishing their higher-school education, and a guarantee that the possessors of them have obtained a good sound education in a sufficiently varied group of subjects to enable them to enter on the further pursuits of life.

AT the annual meeting of the Modern Languages Association, the president, Mr. Mackay, of Ayr Academy, briefly reviewed the work done by the Association during the past year. A census of text-books used for the teaching of modern languages in Scottish schools is being compiled, and a table showing the number of hours per week devoted to modern languages in the different schools in the country. The chief work of the Association had been, however, a persevering effort to bring home to the educated people of Scotland the mischief that is being done to modern languages by the unfair position in which they are placed in the Scottish universities. Mr. A. O. Schlapp, of Edinburgh University, was elected president for the coming year.

LORD ROSEBERY'S notable address to the students of Glasgow University should aid very materially in placing modern languages in a position of equality with the classics. The Modern Languages Association has been hammering away at this subject with a persistency worthy of the importunate widow, but with very little of her success. It is, however, an incalculable gain when a Lord Rector declares from a university platform, with the almost unanimous approval of the whole press of the country,

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"That there is required, on the part of the educational authorities, an admission that a man may be an educated and a cultured gentleman, although he has not seriously studied Latin and Greek, and that France and Germany possess invaluable literatures, with the advantage that they are in languages which are living and not dead."

IRISH.

THE Provost of Trinity College has resigned his seat on the Intermediate Board, which he has held for a very long period. The Lord-Lieutenant has appointed six new Commissioners, one in the room of Dr. Salmon, and five in accordance with the Intermediate Act of last session, which provided that five additional members, experts in education, should be appointed on the Board. The new Commissioners are all distinguished men who have long experience in education, and have shown themselves possessed of enlightened views: Prof. Dill, of Belfast Queen's College, the author of an able work on Roman government and society; Professors Mahaffy and Fitzgerald, of Trinity College, Dublin, the latter a strong advocate of scientific education; Monsignor Molloy, an eminent teacher of science; Father Finlay, a distinguished Fellow of the Royal University; and Dr. Starkie, the Resident Commissioner of National Education. The appointments are likely to be a great assistance in making the new scheme successful.

THE College of Science, Dublin, which will form a centre of scientific research work and instruction under the new Department of Agriculture and Industries, has a large increase in the number of its students this session. On the side of technical instruction, scholarships in science will be given to promising pupils in primary and secondary schools. The curriculum will be reorganised, and new Departments, as those for Agriculture and Sanitary Science, will be added. The professors will be required to devote some of their time to research work for the Department. The College cannot fully enter on its enlarged course till the new buildings in Kildare Street are completed.

IT is announced that a Gold Medal and Senior Moderatorship in Trinity College, Dublin, has been awarded for the first time to a woman, Miss Beatty. The Moderatorship Examination and Freshman Honours have been open since 1893 to women who have passed the Trinity College examinations for women. So far almost no candidates have presented themselves, as lectures are not open, and the B.A. degree would not be given to those winning Moderatorships, while the examinations for women were until now in no way a preparation for these advanced courses. The examinations for women have this year been altered, and are now identical with the T.C.D. Entrance (Pass and High Places) Examination, and it is hoped that if women study for the course so far opened, it may lead to greater advantages in the future.

MR. KEATINGE, lecturer in education, Oxford, completed his courses in Alexandra College in December. The lectures and practical work, which have proved very helpful to the teachers taking them, were during this visit on the subjects, English Literature, Grammar and Composition, and Geography.

AT the distribution of prizes at St. Andrews College, Dublin, in December, a very satisfactory account was given of the progress of the school, which was founded about six years ago by the Presbyterian body in Ireland under the headmastership of Mr. W. Haslett, a distinguished Royal University and Cambridge graduate. The school has now considerably over 300 pupils, and, besides university distinctions, this year occupied the first place among Irish Protestant Intermediate Schools.

THE examinations for certificates and diplomas in teaching established by Trinity College, Dublin, will be held on January 3rd and 4th, 1901.

CURRENT HISTORY.

MR. T. W. RUSSELL has resigned his position as Secretary of the Local Government Board because he differs from Lord Salisbury on Irish land policy. We are reminded of John Bright's resignation in 1882 because he did not approve of the movement against Arabi Pasha in Egypt, and of Lord Randolph Churchill's resignation of the office of Chancellor of the Exchequer because he did not approve of the expenditure on army and navy. It is evident that the British Ministry must be unanimous, of one mind. And that that one mind must be that of the Prime Minister. No one finds fault with this to-day. We feel that it is necessary that the Premier should rule the Cabinet, as the Cabinet rules the nation. So true is it that Great Britain is a monarchy, nay, an absolute monarchy—tempered by general elections. Yet our text-books still persist in repeating the mere party catchwords of the opposition to Walpole, who introduced this necessary unanimity into the counsels of our ministries. Till Walpole's time, and even to a small extent, later, ministries were not unanimous, and therefore weak. Since then, the Premier has governed as well as reigned, to the lasting advantage of the country.

WILLIAM MCKINLEY is not yet re-elected President of the United States of America. It is true that we know he will be elected, and it is probable that his election will not even be noticed in any of our newspapers except as an item of curious constitutional information. But he is not yet chosen. How is this? The fathers of the Republic intended that each State should choose its wisest and best as electors of the President, that these should meet, and freely choose the man whom *they* thought best fitted for the office. But owing to the growth of political parties, and partly also to the growth of means of communication, it has come about that each state chooses *not* its wisest and best, but a number of unimportant persons who *pledge themselves beforehand* as to the person for whom they will vote. When the inhabitants of each state therefore have decided which "ticket" has their preference, the election is practically decided, and no one cares when or where these electors meet. Their decision is now a foregone conclusion, and their voting is as much a form as that of the dean and chapter of an English cathedral in the election of a bishop after the reception of the "letter missive" from the Queen. So impossible is it, by even the most cast-iron of written constitutions, to bind future generations to what we think best for them.

WE strongly recommend our readers to "read, mark, learn, and inwardly digest," in the most serious and leisurely way, the speech which Lord Rosebery delivered as Rector of Glasgow University. Meanwhile, we cull from it this definition of Empire:—"What is Empire," said Lord Rosebery, "but the predominance of race? . . . Human and yet not wholly human—for the most heedless and the most cynical must see the finger of the Divine." Now let us go back to Dante and the thirteenth century. What is Empire, Dante? "Empire is the gift of God: first to the Romans, then transferred to the German nation. Empire is the government of the world in the name of God. There can be but one Emperor as there is but one God, and that Emperor all Christians must obey. It is divine, and yet not wholly divine—for the most devout must see in it the working of humanity." Such, we imagine, would have been the reply of the mediæval poet. How nearly the two agree, yet how are they poles asunder. It

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is as if two travellers starting one east, the other west, should meet the other side of the world. They are in the same spot, but how differently they regard it, by what different ways have they reached it!

IT has been suggested that the Queen should shortly proclaim herself Empress, not only in India, as she is at present, but of the whole Empire. That gives us another idea of Empire than that of Dante's and Lord Rosebery's. This suggestion implicitly defines Empire on the modern territorial idea, that which inspired Francis II. when he called himself Emperor of Austria, which was burlesqued in the Emperor of Hayti, which is assumed when we translate Czar by Emperor. But we called attention to the suggestion in order to emphasise the importance of one or two recent items of news. What kind of Empress would the Queen be in a dominion where such events as these are possible: (*a*) "*Negotiations* have been completed between the Imperial and Canadian Governments for the establishment in Canada of a branch of the Royal Mint to coin Canadian and British currency"; (*b*) "Mr. Chamberlain has finally refused to give any pledge to withdraw the four additional nominated members of the Legislative Council appointed last year; a serious political agitation for the restoration of the former *régime* is now anticipated"; (*c*) "The Premier of Western Australia has informed Mr. Chamberlain that that colony does not intend to reduce her Governor's salary." Governors are appointed in England; *some* colonies *are* proposing to reduce their Governors' salaries.

RECENT HISTORICAL NOVELS.

THIS month's batch of historical tales differs from the last in consisting mainly in books intended for adult readers; but none are absolutely unsuitable for young people. No. (4) was expressly written for children. Nos. (5), (6) and (8) would probably seem rather uninteresting to the young; the remainder are suitable to any age, though not equally pleasing to all tastes. The two novels dealing with Virginia past and present—(3) and (6)—are marked by high literary merit. Miss Glasgow's book, in particular, is as good a novel as one could wish, and a great deal better than one generally comes across. The last four books on our list are not "historical" at all in the usual sense of the word; they are, however, pictures of bits of contemporary local life, viewed from within, which might well serve to "give verisimilitude to the otherwise bald and unconvincing narratives" contained in our geographical text-books. We should especially like to commend the general preface to the "Overseas Library"—in which No. (7) appears—to the notice of all teachers. All the books are published at six shillings except No. 2 (3/6) and No. 7 (1/6).

(1) S. R. CROCKETT. "Joan of the Sword Hand." [393 pp.; 16 ill.] (Ward Lock.)—This book, which seems to be a kind of sequel to "Red Axe," deals with the South Baltic lands during the pontificate of Pope Sixtus IV. (1471-1484), who appears as a character (drawn to the life) towards the end of the volume. Viewed simply as a rapid succession of vivid tableaux it is capital; regarded as historical pabulum it is rank pasture. Mr. Crockett's physical and political geography is puzzling and anachronistic to a degree which seems quite unnecessary. But any reader who, after enjoying the story, has his interest aroused in the real history of the Baltic lands towards the end of the fifteenth century will certainly find his reward.

(2) HAMILTON DRUMMOND. "A Man of his Age." [319 pp.; 4 ill.] (Ward Lock.)—Scene, mainly the kingdom of Navarre during the year 1568, in the critical interval between the second and the third "Religious War" in France. Somewhat weak in motive, the story abounds in stirring incidents, and gives a true notion of the miseries from which Elizabeth and the Channel saved England. Jeanne d'Albret, Queen of Navarre, her son, afterwards Henry IV., and de la Mothe Fénélon are among the characters. The book appears to be a sequel to the author's "For the Religion," and deals with the same subject as his recently published book, "A King's Pawn."

(3) MARY E. WILKINS. "The Heart's Highway." Subtitle: "A Romance of Virginia in the Seventeenth Century." [308 pp.; front.] (John Murray.)—The central point of the story is a kind of Virginian anticipation of the better-known "Boston Tea-Party"—the article destroyed being not imported tea but native-grown tobacco. It illustrates the discontent existing in the American colonies nearly a century before the *Stamp Act*, and also colonial attitude towards the King-Parliament controversies of the time. Atmosphere better than story. Why does Miss Wilkins forget the names of the places in the story, and why does she make Jamestown the capital of Virginia six years after Bacon burned it down?

(4) AMELIA BARR. "Trinity Bells." [278 pp.; 16 ill] (Fisher Unwin.)—A bright story dealing with New York about one hundred years ago. It originally ran through *St. Nicholas Magazine* (which is as good as a page of eulogy), and the illustrations are excellent. The principal character is a young girl of Dutch descent whose father has fallen into the hands of the pirates of Algiers.

(5) GILBERT PARKER. "The Lane that had no Turning." [313 pp.; front.] (Heinemann.)—Mr. Parker's latest and, if he does not repent his threat, last book of stories about French Canada. Among the points illustrated are the great authority of the clergy, the curious blend of reverence and criticism in the attitude of the *habitant* towards the *seigneur*, and the difficulty of reconciling the nationality of blood and speech with the nationality of an "alien" flag. Mr. Parker's sketches of the people of Pontiac are worth bluebooksful of statistics.

(6) ELLEN GLASGOW. "The Voice of the People." [444 pp.] (Heinemann.)—A story of modern Virginia by a Virginian who knows and loves her native state well, and who has the power of describing it so as to make the reader share her pride in the Old Dominion. She draws us negroes, "white trash," and gentle folk of various kinds, in a way which we feel must be "true." Her hero is a poor white who works himself up till he is chosen governor of the state. The story begins soon "after the war," and the scene is mainly Kingsborough (Williamsburg?). The book may especially be commended to those who imagine that all Americans are "Yankees," and that the United States possess "no ruins and no curiosities."

(7) WILLIAM BULFIN. "Tales of the Pampas." [248 pp.] (Fisher Unwin.)—Spirited stories of cattle, and sheep-keeping life on the Argentine Pampas. Many of the characters are Irishmen. The social and climatic conditions of the estancia and the "camp" are well depicted. A teacher about to give a lesson on Argentina would pick up much "colour" from these tales in a pleasant way.

(8) JULIA CROTTIE. "Neighbours." [307 pp.] (Fisher Unwin.)—Sketches rather than stories of modern Irish life in "Innisdoyle," which is represented as a typical country town in Munster. They are not so powerful as Mr. Morrison's "Tales of Mean Streets," but they are just as depressing and probably just as one-sided. It is difficult to believe that Munster folk are almost invariably superstitious, revengeful, consumptive, sordid, shiftless, dishonest, insolvent and drunken. Most of the details may be "true," but they seem hardly varied enough, hardly full enough of spirituality, to make up a complete picture of what may fairly be called Munster life. Are not the Irish in Mr. Bulfin's "Pampas Tales" more truly Irish?

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RECENT SCHOOL BOOKS.

Modern Languages.

Foundations of French. Arranged for Beginners in Preparatory Schools and Colleges by F. D. Aldrich, A.B., and I. L. Foster, A.M. xv. + 177 pp. (Edward Arnold.)—From the preface we learn that "a large part of our American youth do not begin the study of French until the later years of a high-school or preparatory course, and a considerable number not until the freshman year in college or scientific school." And later on: "This book has been prepared with the needs of these maturer students constantly in mind." We are therefore prepared for a clear and concise summary of the essentials of grammar, and (as the main object of such students is to gain a "reading knowledge" of the language, again according to the preface), above all, an attempt to provide a suitable vocabulary. We rub our eyes as we examine the book; the rules are to the front, and are not particularly well expressed, and there are numberless detached sentences for translation into French, many of which are of the well-known kind. A few infelicitous inventions may be quoted: "He has watches and some few hats—He is in the habit of lying to me, but I do not hate him—I am willing to go to eat my breakfast, but it rains—All countries are not so small as England—The days are longer in summer in England than one would believe." It is refreshing to come across such a book; but what a sad waste of energy!

Colloquial French. By L. Meunier. xliii. + 111 pp. (Philip, Son, and Nephew.) 2*s.*—Whatever may be the advantages of this book, they are outweighed by the serious objection that much of the type is far too small. It is false economy; and no teacher with any regard for the children committed to his care would let them use the book. Teachers may derive some advantage from a perusal of it; but they must be warned against the section on the pronunciation (which is also published separately), for it is evidently not based on a scientific study of the phonetics of French. The method is, with slight modifications, that known as the "grammar and translation method," with detached sentences.

Exercises on the French Irregular Verbs. By M. Guichard, B.-ès-L. vi. + 75 pp. (Longmans.) 1*s.* 6*d.*—The author has had the happy idea of writing a number of short stories, each containing the parts of some one irregular verb which are likely to give difficulty. This he has done with much skill, and the result is a little volume which can be recommended without reserve, especially as he has not added a vocabulary. It will be useful to any teacher, whatever his method may be.

Macmillan's German Idioms. Prepared and translated by Myra Taker. viii. + 268 pp. (Macmillan.) 3*s.* 6*d.*—A very useful book for purposes of reference. German words and phrases are given in alphabetical order, and an idiomatic English rendering is supplied in a parallel column. Miss Taker has done her work very conscientiously. It seems a pity that the plan adopted in the companion volume for French (by Mme. Plan) was not adopted here also; explanations in German would have made it a very helpful book for the New Method teacher. It would have been well to add the name of the author from whose works the passages quoted are taken.

Krieg und Frieden. Tales selected and edited by Dr. W. Bernhardt. ix. + 120 pp. (Edward Arnold.)—This little volume contains three stories: *Mutterliebe*, by E. Frommel; *Der Sohn der Pussta*, by "Villamaria;" and *Publius*, by H. Hoffmann. The editor has supplied short biographies and good notes. The stories themselves are new to us, and have not previously been edited for schools. They are well told, but rather sombre; the first and second end with the death of the principal character; in the third we have the half humorous, half pathetic figure of a schoolmaster who in the end loses his only son. The book is well got up.

Selections in Prose and Verse from German Authors of the Day. Selected by Dr. A. Weiss. Two parts, 56 pp. and 64 pp. (Hachette.) 1*s.* each.—A convenient selection for practice in unseen translation. The passages are taken from many authors, and are of moderate difficulty. There is about one verse passage to five in prose. The text is well printed, according to the revised spelling.

Classics.

Xenophon's Anabasis. Book I. By E. C. Marchant, M.A. 121 + xxxi. pp. (Bell.) 1*s.* 6*d.*—The well-known "Illustrated Classics" series now includes Greek authors, of whose works this is the first instalment. The Greek text is well printed, the illustrations include several landscapes as well as reproductions of ancient sculptures and paintings, and there are exercises and an appendix on syntax rules. Mr. Marchant disclaims all "trace of erudition," but his scholarship has availed to produce a very useful edition, which should even prove an interesting introduction to Xenophon such as most of us, when schoolboys, emphatically did not have.

Bell's Illustrated Classical Series grows apace. We have received *Selections from Cicero*, by J. F. Charles, B.A., 107 + xxxvi. pp.; *Fables of Phaedrus*, a selection by R. H. Chambers, M.A., 96 + liii. pp.; *Stories of Great Men*, from Romulus to Scipio Africanus Minor, by F. Conway, M.A., 95 + xlvii. pp.; *Horace, Odes, Book III.*, by H. Latter, M.A., 107 + lix. pp.; and *Vergil, Aeneid, Book VI.*, by J. T. Phillipson, M.A., 112 + xliii. pp. (Bell.) 1*s.* 6*d.* each.—It will be sufficient to say that these volumes quite keep up the very useful features of this series, in which there is now something to suit all stages in the early growth of the future Latin scholar. The illustrations range from simple outlined pictures to reproductions from photographs of scenes in which the events of the text are laid, and the notes are all that could be desired to elucidate the grammar and subject-matter of the authors.

Sallust. Catiline. By W. C. Summers, M.A. xl. + 120 pp. (Cambridge University Press.) 2*s.*—This edition has been prepared specially "for passmen and private students," but will be found none the less useful for school use. It contains much valuable matter in the introduction on Sallust, the march of events which led up to, and the progress of, the conspiracy, together with a sketch of the Roman Constitution. The text mainly follows that of Jordan, though the editor sometimes finds occasion to differ from it, differences for which he gives his reasons, and perhaps the best feature of the notes is the discussion of MS. readings and variations. There is a very full index of ten pages.

The First Epistle of S. Peter (Greek Text). By the Rev. J. H. B. Masterman, M.A. x. + 190 pp. (Macmillan.) 3*s.* 6*d.* net.—The Principal of the Midland Clergy College intends this book "for candidates for Deacon's orders as a useful introduction to larger and more detailed commentaries." It may, however, be treated here as likely to be serviceable in the hands of the master, for a Greek Testament class. The introduction contains discussions of date, place and circumstances of writing, and also particularly useful chapters on the language of the writer in its relation to that of other books in the New Testament. The "Paraphrase" which follows is hardly necessary in addition to the text of the Revised Version, nor is it very successful. The earlier portion of the commentary (where an

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editor has the advantage of using Dr. Hort's Commentary—a debt acknowledged by Mr. Masterman) seems to us better than the latter. The notes throw light on words and usages of New Testament Greek, though that on διάβολος (p. 167), and Additional Note C (pp. 179-180) do not convey a very convincing impression. There is somewhat too much poetical quotation, and we have noticed a few misprints. But the editor has on the whole produced here a stimulating edition of an epistle which contains very difficult passages.

Edited Books.

Woodstock, by Sir Walter Scott. Edited by H. Corstorphine. 224 pp. (A. & C. Black.) 1*s.*—This volume is a little more attractive than some others in this series, for which we have found no praise to spare. As a reading book intended to make schoolboys take an intelligent interest in Sir Walter Scott, it will probably be found serviceable; but *the* editor and *the* edition of Scott as an author for schools have yet to be discovered. The introduction to this volume is really very well done. The notes are terse and not very full; and we question whether the statement that "priest is a doublet of presbyter" will not need even more explanation than it affords. Some of the mythological allusions also are very scantily dealt with; but a great many explanations of obsolete military phrases will be found very interesting.

Carlyle's Essay on Burns. Edited by J. Downie. 116 pp. (Blackwood.) 2*s.* 6*d.*—This is a small book at a high figure; but the work of editing it has been so well and conscientiously done that it is worth more than the price charged. It is the first attempt to make a schoolbook out of a very remarkable criticism, and is almost deserving of the name of a brilliant performance. The introduction and notes are masterly. "Carlyle was heroic; Burns was magnetic"; an editor with such powers of criticism and expression as are found here is capable of even better things.

The Animal Story-Book Reader.—Edited by Andrew Lang. 174 pp. (Longmans.) 1*s.* 4*d.*—In literature Mr. Andrew Lang is ubiquitous, and he is now to be found asking for admission to the school forms of juveniles. In his own way he is always striking; in the present instance he has achieved greatness. A most admirable children's book, very finely illustrated.

Arnold's Continuous Story Readers. Grades I. to IV. 105, 127, 189, 223 pp. Prices, 10*d.*, 1*s.*, 1*s.* 2*d.*, 1*s.* 4*d.* respectively. This is a very good idea very well carried out and pretty certain to achieve popularity. The style, printing and illustrations are excellent.

Cowper's Expostulation. 61 pp. (Macmillan.) 1*s.*—This is a small edition of a very little known work, but it is well and ably done.

Helps to the Study of Lyra Heroica. By E. Ruse. 127 pp. (Macmillan.) 1*s.* 6*d.* Also, *Notes and Elucidations to Henley's Lyra Heroica.* By W. W. Greg and L. C. Cornford. 80 pp. (David Nutt.) 1*s.*—Speaking strictly for ourselves, we never found Mr. Henley's glorious anthology greatly in need of professorial illumination; but to those who are in the schoolboy and student stages these two booklets may possibly prove very helpful. They represent considerable and accurate scholarship, and exhibit much enthusiasm, and are the evident result of great painstaking in the rather uninviting fields of scholarly research.

Shakespeare's Life and Work. By Sidney Lee. 232 pp. (Smith, Elder & Co.) 2*s.* 6*d.*—This is not the monumental life of Shakespeare which has earned for Mr. Lee so high a place in contemporary scholarship, but an abbreviation of the same perfectly adapted to the needs of students. It is splendidly done, and contains all that is essential in the larger work. In addition it is served by a most elaborate index which is in itself a masterpiece.

The Second Epistle to the Thessalonians. By Rev. G. W. Garrod. 163 pp. (Macmillan.) 2*s.* 6*d.*—Mr. Garrod has already dealt with no inconsiderable portion of the epistolary matter of the New Testament upon exactly the same plan he uses in this volume, which is of the same excellence for teaching purposes as his foregoing volumes. There is every indication of learning and temperate judgment in his pages; and his appendix of passages deserving special attention will commend itself to many students. Altogether, a most helpful guide and a clearly conceived teaching method which will be appreciated wherever it is known.

The Book of Daniel (Cambridge Bible). Edited by Prof. Driver. 214 pp. (Pitt Press.)—We have waited long for this book, but it has come at last; and the wonder is how so much can have been compressed into so little space. It is truly a marvellous edition; broad and thoughtful in conception; accurate, learned, and yet literary and readable in a very high degree. The introduction fills almost half the space at command, and in it every point of interest in the study of this profound and obscure Book receives illumination and critical discussion. The historical portion is brilliant; the question of authorship and date is treated with professorial fulness; and the section on apolyptic literature contains much that is new and suggestive. The notes on the obscure visions and prophecies in chapters vii. and ix. of Daniel do not tempt Prof. Driver into anything but a display of real critical scholarship, and a wide-eyed comparison of many conflicting theories about them; and in a manual for students this is undoubtedly the best and wisest course. The volume will undoubtedly enhance the reputation of the well-known series of commentaries in which it takes high rank; and those steady-going people who do not want to be dogmatically certain about every point that is obscure to the greatest intellects, and yields very little result to the most patient scholarship, will read Prof. Driver's notes and comments with a feeling of positive gladness in their reasonable and temperate tone, and rise from the study of this work with knowledge greatly enlarged, and convictions subjected to no undue strain by positive statements which not even an archangel could verify. The index is tolerably complete, and includes a section devoted entirely to Hebrew expressions; also a list of the archaisms in the Authorised Version which will be interesting to students of English literature.

History.

Rome: its Rise and Fall. A Text-Book for High Schools and Colleges. By Philip van Ness Myers, L.H.D. (Boston: Ginn.) 5*s.* 6*d.*—This seems to us a very good book: accurate in detail, just in the general survey of national tendencies and movements, written in an easy and clear style. It shows independent study of the authorities, a mastery of the most recent literature of the subject, and steers clear of many small errors which schoolbooks are apt to show. For a schoolbook, indeed, the history seems to be well adapted. In particular, the earlier constitutional history, which is very hard for a child to understand, is treated with simplicity; too much is not attempted, and the pupil may fairly be expected to learn it all. Thus the account of the Twelve Tables is quite interesting. There are about a hundred illustrations and maps; the latter sufficient for their purpose, the former well chosen and full of interest. The value of such aids to learning is still too little appreciated, and we welcome their presence here. It would be useful, however, for the teacher, and could do no harm to the child, if the source of these pictures were always indicated, and especially any English books, such as Anderson's "Atlas of Antiquities,"

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where they are reproduced. Another good point in the book is its scope. The history does not stop short at the battle of Actium, as though the empire were not in some respects the most important period in Roman history; it is carried down to the fall of the empire, and thus in one brief volume the whole story of Rome is contained. The empire takes up nearly half the book, and it is necessarily treated in brief; but attention is concentrated on important things, so that the march of events is clearly discernible. Among the causes of Rome's fall one most important cause seems to be omitted, the universal corruption of officials. This, as Mr. Dill has brought out, always accompanies the decay of empires, when they do decay. Chapters on architecture, literature, law and philosophy complete the volume. There are chronological and statistical tables here and there, and each chapter is followed by a list of useful references for further study. Mr. Myers is judicious, though perhaps he is a trifle too sceptical in the early legends, and not sceptical enough in the story of the sack of Rome by the Gauls. We have only to add that the explanations of *pontifex* given in text and note to p. 34 should be transposed, and that there is a vexatious misprint on p. 28, "*devorere*" for *devovere*.

Source-Book of English History. By Elizabeth K. Kendall, M.A. xxii. + 483 pp. (New York: The Macmillan Company.) 3*s.* 6*d.*—Our American cousins are busily treading in the footsteps of our English historians, and are editing "source-books," or selections of contemporary documents illustrative of national history. They are doing more; they are leading in the adaptation of such work for junior students. Some months ago we welcomed a selection of documents illustrative of American history edited by Professor Hart, of Harvard, and now Miss Kendall sends us something that is useful for our own purposes. It is good—of course it is good. All such publications must needs be so. All that the reviewer can do is to indicate the particular kind of goodness. The selections begin with Tacitus on the Britons and Germans, and end with a quotation from the *Spectator* of 1898. The former half of the book brings us down to the "Restoration," and consists of quotations from mediæval chroniclers, from political poems, diarists and historians. The latter half draws on newspapers, parliamentary debates, and a great variety of contemporary sources. The documents in foreign languages are given in translations; those in older English are modernised to the capacity of school children. "Authorities" and their study divides itself as a subject into two parts. The advanced student reads the documents *in extenso*, selects, or rather collects, all that can possibly be of service, and bases thereupon his conclusions, whether to be published or not. For beginners (and "beginning" is in this case a long process) the documents must be used as illustrations only. In other words, the reasoned results of research must be taught first, even if they take the form of the "driest" history, and selections from the authorities may then be introduced, such selections being carefully made and still more carefully edited. It is for these reasons that we welcome heartily and recommend strongly such books as Miss Kendall's. No teacher should lose an hour in procuring this book, and at least reading to his class the quotations which refer to the period they may happen to be studying.

A Century of Continental History (1780-1880). By J. H. Rose. x. + 408 pp. (Stanford.) 6*s.*—A book which has reached its fourth edition, as Mr. Rose's has done, scarcely needs commendation from us. He has been for years an extension lecturer under the Cambridge scheme, and, we gather, has written his book originally for his audiences. It is a book admirably adapted for its purpose, based on a study of the best authorities, and treating in an introductory way the interesting story of Europe in the nineteenth century. Comparing this with the second edition, we find that some of the slight defects which were then visible have been removed, and those which still remain do not seriously detract from the value of this excellent manual.

Europe in the Days of Nelson; or, England and Europe (1789-1815). By T. J. Walker. 107 pp. (Gill.) 1*s.* 6*d.*—Mr. Walker's book, though small, is a very good history. We are particularly struck with the unusual clearness of his exposition. Even those who have no previous knowledge of the subject will, we imagine, have no difficulty in understanding even the complications of international relations during the period of the Revolutionary and Napoleonic wars. Specially good are the sections on the commercial war which consisted of Berlin and Milan decrees, Orders in Council, &c. The book contains besides nine clear, coloured maps which supply the necessary geography.

Mathematics.

A Treatise on Geometrical Optics. By R. A. Herman, M.A. x. + 344 pp. (Cambridge University Press.) 10*s.*—This is a very useful and by no means superfluous companion to the treatises of Heath and Pendlebury. With the help of a theorem due to Helmholtz, Mr. Herman deduces the properties of a symmetrical system from the consideration of the divergence of small periods. This method is very instructive, and will probably seem to most readers more elementary than Gauss's analytical treatment. In the chapters on the characteristic function due reference is made to the work of Clerk-Maxwell, Larmor and Sampson; and the chapter on distortion is more complete than is usual in works of this kind. It is hardly necessary to add that the author's analysis is both exact and elegant, so far as his subject admits of these qualities.

The Elements of the Differential and Integral Calculus. By J. W. A. Young and C. E. Lineburger. xviii. + 410 pp. (Hirschfeld Bros.) 10*s.* 6*d.*—This is based upon the "Kurzgefasstes Lehrbuch" of Nernst and Schönfliess, and it is interesting to find that in each case one of the collaborating authors is a professor of chemistry. The result is that we have a proper development of graphical methods, and an unusually large number of applications drawn from theoretical dynamics, physics and physical chemistry. Although the work is of considerable length, it is strictly elementary: the authors have refrained from discussing the peculiarly subtle difficulties which beset the subject, and have at the same time succeeded in avoiding the suggestion of false conclusions. A working knowledge of the calculus is becoming more and more necessary to the student of physical science, and a book of this kind, so attractively presenting the essentials of what he ought to know, deserves a warm welcome. The volume is a very favourable specimen of American typography.

A Treatise on Elementary Dynamics. By H. A. Roberts, M.A. xii. + 258 pp. (Macmillan.) 4*s.* 6*d.*—This is a work of quite exceptional value and interest, because, while it is intended for junior students, the first principles of the subject are presented in the form which has commended itself to the latest authorities, more particularly Mach. It will thus form a very useful introduction to Professor Love's more advanced treatise. Mr. Roberts's preliminary chapters on kinematics are exceedingly good, and very properly include the elements of vector analysis. The examples, both worked and unworked, have been carefully selected. The treatise may be warmly recommended as marking a distinct advance towards the logical presentation of this difficult subject in a form which is not too abstruse for beginners.

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The Principles of Mechanics. By F. Slate. Part I. xii. + 300 pp. (The Macmillan Company.) 7*s.* 6*d.*—This is another work which shows the growing appreciation of the modified view of the principles of dynamics which is due to Kirchhoff, Mach and others. It is best adapted, perhaps, for university students who attend lectures on the subject; such readers will probably find it both helpful and stimulating. The use of elementary calculus is, of course, to be approved; but the treatment, generally, is rather unnecessarily analytical, and there is a lack of numerical examples which is certainly to be regretted.

Inductive Geometry for Transition Classes. By H. A. Nesbitt, M.A. viii. + 92 pp. (Swan Sonnenschein.) 1*s.* 6*d.* —This is an elementary course of geometrical drawing which really does seem likely to develop the pupil's powers of observation and resource, and to make him familiar with the first notions of geometry. It is a pity that parallel rulers are recommended: set squares are the proper instruments, and the use of them ought to have been fully explained.

Monthly Progress Tests. Scheme B, Part III. By R. F. Macdonald. 48 pp. (Macmillan.) 3*d.*—Questions in arithmetic of a very monotonous type, eighty per cent. or so dealing with the compound rules for money. The papers are designed to cover the work of three terms, and are said to be graded: we have entirely failed to see evidence of this. It is earnestly to be hoped that there are not many schools where the whole school year in arithmetic is spent on such questions as, "What money is 47 times £2 1*s.* 10¾*d.*?" or "Find the total value of 10 sovereigns, 1 crown, 1 florin, 17 sixpences, 12 threepenny pieces, 12 penny and 6 three-halfpenny stamps." The last, by-the-bye, is for the last month of the third term. A rather serious proportion of the questions are disfigured by ambiguity or clumsiness of expression.

Science and Technology.

Handbook of Practical Botany. By Dr. E. Strasburger. Translated and edited from the German, with many additional notes, by W. Hillhouse, M.A., F.L.S. Fifth edition. xxxii. + 519 pp. (Swan Sonnenschein.) 10*s.* 6*d.*—This work is the fifth English edition of Prof. Strasburger's well-known manual, "Das Botanische Praktikum," and although the translation has been practically rewritten throughout, full use, we are informed in the preface, has been made of the third edition of Strasburger's work. This handbook is so well known that a detailed review is hardly called for. Without doubt it is one of the most complete and satisfactory practical works on anatomy and histology for the use of botanists extant. Not only is the volume admirably suited for the use of advanced classes of students, but also for those who, from desire or circumstances, work at the subject without the aid of a teacher. Starting with descriptions of a few different microscopes and the making of the simplest preparations, the work increases in difficulty until the last chapter is reached, which, dealing with cell and nuclear division, is certainly the most arduous work, both as regards observation and *technique*, that a botanist is called upon to perform. A large amount of information is given concerning the different stains and reagents used, but we do not notice any mention made of azoblue, which is one of the best reagents for the demonstration of callus. Types of the principal groups of plants are described; as a whole, very little fault is to be found with their selection. We do not, however, consider that *Marchantia* is a good type to take as a representative of the liverworts, on account of its highly modified reproductive organs. If it were considered desirable to retain this plant, then it would have been well to have added an alternative simpler one, as for example *Pellia*.

Botanical Tables for the Use of Junior Students. By Arabella B. Buckley. New edition. (Stanford.) 1*s.* 6*d.*—The use of tables is frequently of value in teaching, provided, of course, they are properly used, and not abused in the process known as "cramming." This danger, it is pleasurable to note, has been guarded against by the author, for she heads the first table with a few remarks which the teacher will do well to note. For example, "Definitions are given of all technical terms, which may be learnt *after* they have been explained and illustrated by the teacher." And again, "In describing a plant each pupil should have a specimen . . ." The first table deals with morphological definitions, the majority of which are both clear and correct. There are certain points, however, which need improvement. For instance, the two following definitions might be mentioned:—"Threadlike leaves, stipules, or petioles are called *tendrils*," "ovules are formed of a *nucleus* surrounded by an inner coat or *secundine*, and outer coat or *primine*." Then again there are a few omissions; it would have been well to have pointed out the different kinds of bulbs, and to have included a definition of "saprophyte" to accompany those given of parasites and epiphytes. The second table deals with classification, several parts of which are open to objection; for example, the Phanerogams are divided into dicotyledons or exogens and monocotyledons or endogens; the use of the archaic terms endogens and exogens results in the placing of the Coniferæ among the dicotyledons, which is anything but their correct position. Besides these two terms, others such as acotyledons, acrogens and thallogens are utilised, notwithstanding the fact that they are seldom or never used by modern botanists. The description of several of the families of the Cryptogamia leaves a great deal to be desired.

Miscellaneous.

The Secondary School System of Germany. By Frederick E. Bolton, M.S., Ph.D. xix. + 398 pp. (Edward Arnold.) 6*s.*—Professor Bolton gives, in convenient compass, a very readable account of the essential characteristics of German secondary education. The treatment is not of the detailed kind to which we called attention in reviewing Dr. Russell's book on the same subject last year.

The writer's point of view is throughout distinctly American. All comparisons instituted are between the schools and teachers of America and Germany, so that in some respects the volume is scarcely suitable for British readers. As a fair estimate of the relative advantages of German and American methods in education, we can heartily recommend Prof. Bolton's little book. Some sections of the volume form peculiarly suitable reading for the English assistant-master, so much exercised as he is just now with salary grievances. It would, indeed, be worth while for a member of the A.M.A. to bring before the next meeting of the Association a carefully prepared comparison between the amount of preliminary training required from German schoolmasters and the salaries they can earn with similar data as far as they affect English schoolmasters. The results, unless we are much mistaken, would prove very surprising. A great deal of information as to German methods of presenting various school subjects to the classes of secondary schools can be gleaned from Prof. Bolton's pages. We are considerably impressed with the small amount of laboratory work the author found is done by the German boy during his school training in science; in this case, at all events, we manage these things better in England. Here is one of the author's examples:—"In the lessons on the Marchantia . . . . the diagrams were profuse, fine wax models were numerous, and the teacher's explanations lucid, concise and scientific, but the majority of the class were not within twenty feet of the models,

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and I doubt whether a single one ever saw the real plant. There were certainly no plants in the room, and no instructions were given for procuring them." Nor is Prof. Bolton alone in his opinion. Prof. Russell wrote on another occasion (*School Review*, Jan., 1897): "While in theory each pupil is expected to have in his hands a specimen of all the common plants as they are discussed in class, I have seen the pea studied by a class of thirty boys from a model that never left the teacher's desk during the hour, and at the close of the lesson not a word was said about noting the plant in its cultivated state, although acres of it were growing within a mile of the site; but, on the contrary, the home task assigned was to copy the drawing given in the text-book. I still have my doubts whether the majority of the class did not conceive of the true flower as being about a foot in diameter."

The Law relating to Schools and Teachers. By T. A. Organ, B.A., Barrister-at-Law. xvi.+566 pp. (Leeds: Arnold and Son.) 8*s.* 6*d.* net.—This volume deals, in an able and exhaustive manner, with every phase of the law regulating all classes of schools. The fact that the author is Standing Counsel of the National Union of Teachers is guarantee enough of his perfect familiarity with his subject so far as public elementary schools are concerned; and we may remind readers of the helpful articles contributed by Mr. Organ to THE SCHOOL WORLD last year as sufficient proof that any difficulties likely to be experienced in secondary schools will be much simplified when treated by the author of this excellent manual. As regards the scope of the treatise, we may say that the whole of the Acts, Minutes, and Regulations which have been issued for the guidance of education are codified, and all recent legislation, up to the rising of Parliament last year, is included. As being of particular interest to teachers in schools other than elementary, it may be stated that separate chapters on "Technical Instruction in England," "Intermediate or Secondary Education in Wales," and "The Teachers' Tenure of Office," are included. Every teacher and all governors of schools should have a copy of this indispensable guide.

Wilderness Ways. By William J. Long. Second Series. 154 pp. (Edward Arnold.)—It is not long ago that we had the opportunity of writing enthusiastically of the first series of Mr. Long's sketches of animal life. The present volume is of the same delightful nature as its predecessor. The youngster who has the good fortune to be introduced to the beasts of the field by Mr. Long will be sure to get to love most of them and to understand them all. Teachers of nature-study cannot afford to neglect these books.

Macmillan's Brushwork Copy-Books. By A. R. Cartwright and F. C. Proctor. Nos. 1 to 4, 4*d.*; and 5 and 6, 5*d.*—These brushwork copy-books should create a great demand in schools of every grade in which art teaching is recognised as part of the system of education. They form a graduated scheme of lessons commencing with simple brush-forms, and passing on to conventional designs, natural plant-forms, free brush-forms, and brushwork design. Brushwork forms an excellent training in the art of seeing. Its object is twofold. It trains the eye for colour, and creates an appreciation for symmetry and form. The authors are to be commended for having gone to nature for their illustrations. All boys and girls would feel the benefit of hand and eye training such as these books give. The copies are printed on good stout cartridge paper, and seeing the price, should have a large sale.

Sewing and Knitting Diagrams. By E. Hughes. (W. and A. K. Johnston.) Size 34 × 28 in. 3*s.* 6*d.* each, on cloth and rollers, varnished.—A very comprehensive interpretation of the needlework of Standards I. to VII., as required by the Needlework Schedule of the Education Code, is set forth in Miss Hughes' seven sheets of diagrams. From the elementary to the more complicated work the diagrams of the specimens are accurate and clear. Moreover, the illustrations are not confined to finished specimens. Method of arranging and tacking, position of the needle and cotton, fastenings on and off, &c., &c., have not been forgotten. The specimens of patching, darning and knitting may be remarked upon as particularly good. Some illustrations of cutting out are given, but in such a set of diagrams these are necessarily somewhat small. The lines are, however, clearly marked, and the spaces on the lined paper are well defined. An excellent little handbook accompanies the diagrams. This gives practical notes under headings for every lesson required for each standard, and in itself will prove a boon to the teacher of needlework.

Cookery Diagrams. By Hester Davies. (W. & A. K. Johnston.) Size 34 × 28 in. 3*s.* 6*d.* each, on cloth and rollers, varnished.—These comprise a very interesting and useful set of diagrams compiled by Miss Davies, superintendent of the Cardiff School of Cookery. The variety of methods of cutting up the ox and the sheep adopted in England and in Scotland are very clearly illustrated in Diagram I. No. II. shows the joints most suitable for cooking by boiling, and on the same sheet appear poultry and rabbits trussed for boiling. No. III. is devoted to roasting and baking, and joints of beef, veal, mutton and pork, together with some well-trussed poultry, are shown. No. IV. illustrates stewing, frying and grilling. Nos. V. and VI. show fish and vegetables of various kinds. On each sheet short explanatory notes and hints on cooking are given. The colouring of the diagrams is good and the general style is attractive. This set of diagrams should prove of real value as an aid to teaching cookery in elementary schools. They will doubtless also find a place in every school for training students for cookery diplomas.

The Child's Song and Game Book. By H. K. Moore, Mus. Bac., B.A. 20 pp. (Swan Sonnenschein.) 1*s.*—This further collection of original songs and games for children maintains the high standard of Mr. Moore's previous work. The words and tunes will both appeal to children, with whom this author and composer has long been a favourite.

Thoughts in many Minds on Animal Life. Gathered by H. C. F. 50 pp. (Women's Printing Society.) 1*s.* Contains a collection of quotations on the subjects of kindness to animals and the mystery of life. Even at the risk of repetition it would have been better to have given the source of each selection immediately after it. The booklet may form a convenient substitute for Christmas cards or similar purposes.

The Perfect Composition Roll and Inks. Manufactured by H. J. Herbert and Co., 9, Hamilton Street, Sydney, N.S.W. 12*s.*—This convenient hectograph, the newest form in use in England, has been lately introduced from Australia, where it already enjoys a wide popularity. It has been adopted by the New South Wales and other Colonial Governments, and is in general use amongst schoolmasters, clergymen, banking institutions, and other commercial firms in the colonies. For this reason alone it merits attention. Our trial of the apparatus has proved it to be simple, clean, and effective. As with the ordinary hectograph, the original is written with special inks—black, violet, red or green—but these flow readily, and do not clog the pen. The usual tray of gelatine is, however, replaced by a roll of specially gelatanised paper. The original copy is placed face downwards on the paper, and after an interval of a minute or so is removed; copies may be produced immediately by applying paper to the surface and rubbing, as was done with the original. Over a hundred clear impressions can easily be obtained, and after a sufficient number of copies has been repro-

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duced the portion of the surface just employed is rolled up towards the unused portion of the roll. Each roll is six yards long, so that after one use it is immediately ready for a second. The surface can be utilised from end to end three times over, and in this way over fifty different papers can be copied by means of one roll of gelatinised paper; this, at the cost per roll, is not expensive. The apparatus will specially commend itself, we are sure, to teachers who have to set papers in such subjects as shorthand, music and drawing, when the management of a stylographic pen in producing lines of different thickness is confessedly difficult and unsatisfactory. The great merits of "The Composition Roll" are its cleanliness and its immediate readiness for further use.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

A Teacher's Library of Classics.

MR. ROUSE seems to know so much about classical books, and to be so enthusiastic in spreading the knowledge of them, that I venture to ask if he would be so good as to give some advice to a somewhat different class of readers from that for which he wrote last month. I need not sketch my circumstances. My friend, Mr. H. G. Wells, has told my story in a well-known book. Like many other masters in the smaller secondary schools, I had to begin to teach almost before I had begun to learn. My studies have been mainly in natural science; I have looked at classics only just so far as was necessary to secure a pass in examinations, and the editions which I have used have not cost anything like eighteen shillings each, and have been expressly designed to enable their users to dispense with many of the books which Mr. Rouse considers indispensable. It is quite possible, I think, that, though Mr. Rouse's knowledge of classical books is so extensive, he is not acquainted with those from which exclusively I have obtained what knowledge of the classics I possess.

Now I have to teach classics, and I want to do it decently; but I have practically no books, and my income is so small that I doubt whether I shall be able to spend in ten years on all kinds of books as much as Mr. Rouse assumes that his readers will be willing to spend on classics alone at a single burst. There are, I suppose, many more teachers, men and women, in my position than in the position of affluence which Mr. Rouse takes for granted. Would he kindly select for us about £5 worth of the most necessary classical books, starting from nothing? I do not mean small grammars and cheap editions such as my boys use, nor costly books which ought to be in the school library, but books which the teacher needs to have at his elbow. There are many large grammars, dictionaries and histories. I shall certainly be unable to get them all, but I might get one of each if I was assured that it was the best, *i.e.*, the most likely to help practical teachers. Probably those which Mr. Rouse first takes down from his shelves would be the ones which would suit me best. I always get books second-hand if I possibly can, but that practice sometimes lets me in for a worthless book. I should be grateful if Mr. Rouse could warn me against any such pitfalls with regard to the books which he names—if he cares to give me this help I venture to ask on behalf of many of your readers. For instance, in a recent remainder catalogue I find a Pictorial Atlas of Homer by Professor Anderson, originally published at 10s. 6d., is on sale for 4s. Should I be well advised in buying this instead of the guinea edition which Mr. Rouse mentions? F. LEWISHAM.

Clapham.

I HAVE noted below a few titles of good books which I hope Mr. Lewisham may find useful. If he would care for any titles of good editions of authors, I will send him a few. If I were Mr. Lewisham, I should get complete texts of as many authors as possible. Thus all the dramatists in the "Poetæ Scenici Graeci" can be got for 7s. 6d. or 10s. second-hand, and all the chief Latin poets in Weber's "Corpus Poetarum Latinarum," or Postgate's new "Corpus," which costs more but is worth it. Then I should get the best edition possible of one part of each author and work up the rest without notes. The German texts are the cheapest, but they are generally badly printed and their merit is uneven; the new Oxford series is better but dearer; the old series of Oxford and Cambridge texts are not reliable.

In conclusion, let me congratulate Mr. Lewisham, who, if his biographer told the truth, has a pearl of great price which outweighs all the dictionaries ever published.

Rugby. W. H. D. ROUSE.

DICTIONARIES.

Liddell & Scott *Greek Lexicon* (8th edition, published £1 16s.); but the 6th edition is almost as useful, and can be got cheap second-hand. (The intermediate edition is hardly more useful than the very small one.) Lewis & Short's *Latin Dict.* (24s.) can also be obtained second hand. Both indispensable for any but elementary work. Smith's Intermediate Classical Dictionary, 18s., is excellent: it deals with Biography, Mythology, and Geography. This, as also Seyffert's Dictionary of Antiquities, can be got second-hand for about 7s. 6d.

GRAMMARS.

Goodwin's Greek Moods and Tenses, second edition (not the first, which is inferior), 14s.; Goodwin's Greek Grammar (6s.), and his Greek Grammar for schools, containing accidence as well (3s. 6d.). Kennedy's Latin Grammar (not the primer) will probably be most useful for ordinary work; Roby's Latin Grammar for reference or Roby's School Latin Grammar; Lindsay's Short Historical Latin Grammar.

HISTORY.

In a convenient size, Oman's (4s. 6d.) or Bury's Greek History (8s. 6d.): Liddell's Roman (7s. 6d.), Bury's Early Empire (7s. 6d.), and Smith's Gibbon (10s.); all three in Smith's series.

LITERARY.

Moulton's Ancient Classical Drama is designed specially for those not familiar with Greek, and it is a good book.

The pictorial Atlas to Homer is different from the Atlas of Classical Antiquities, and quite worth getting.

The Oral Teaching of Latin.

Now that so many of our teachers have seen fit to adopt "direct" and oral methods for the teaching of modern languages, it may be of interest to many to know how far the same methods may be applied to the teaching of Latin and what results can be obtained from their employment. It is hardly necessary to remark that there is not the same *prima facie* logical necessity for teaching Latin by the use of questions asked and answers given in that language as there is in the case of French and German. There is no such essential importance attached to the power of fluent expression in a language which is nowhere spoken. Nevertheless, it is possible, as I will endeavour to explain, by the use of such a method to impart to beginners the following desirable possessions, which are briefly:—(*a*) a good and rapidly acquired vocabulary; (*b*) a grasp of grammatical construction; (*c*) a power of accuracy in

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reading and pronouncing Latin; (*d*) an intelligent interest in the work of the pupils which cannot otherwise be easily stimulated.

Provided that the material be elementary, the method may be applied to any of the well-known text-books in general use. Let us take as our material the following sentences from Rivington's "Latin Reader, First Term, Book I." The pupils are supposed to know thoroughly the first three declensions of nouns, adjectives of three and of two terminations, the indicative tenses of active verbs of all four conjugations, and of the verb "sum." The teacher begins by reading the first sentence, keeping the word-groups together thus:—

"Sagitta acris—fortem militem—vulneravit."

The pupils then repeat the sentence in chorus, keeping the same word-groups until it is read by all to the teacher's satisfaction. It is then translated by one of the class. Questions are then asked in the following order:—

Subject question:—"Quid fortem militem vulneravit?"

Object question:—"Quem acris sagitta vulneravit?"

Predicate question;—"Quid acris sagitta fecit?"

Enlargement of subject:—"Qualis sagitta militem vulneravit?"

Enlargement of object:—"Qualem militem sagitta vulneravit?"

The pupils are asked to place the emphatic word first in their answers, which will be:—(1) "*Sagitta* militem vulneravit." (2) "*Militem* sagitta vulneravit." (3) "*Vulneravit* militem" or "*Vulneravit* militem sagitta." (4) "*Acris* sagitta militem vulneravit." (5) "*Fortem* militem sagitta vulneravit."

After the questions have been asked and answered by the class as a whole and by individuals, the next sentence is taken up and treated in the same way.

"Filia tua—carmen cantat."

The questions will be:—

(1) "Quis carmen cantat?" (2) "Quid filia cantat?" (3) "Quid facit filia?" (4) "Cujus filia cantat?"

After a sufficient number of sentences have been thoroughly dealt with, the text-books, which had hitherto been open and freely used, are shut and the questions are asked again, first in sequence and then out of sequence. Two of the pupils are stationed at the blackboard, one to write down the questions as the teacher asks them and the other to write the answers. This familiarises the pupils with the written form of the words. Meanwhile the attention of the rest of the class is diverted from the two pupils at the blackboard by the teacher, who intersperses, with the Latin questions, questions in English on the parsing of words that occur in the material. This is done partly to give the pupils time to write down questions and answers, and partly, of course, for the purpose of drilling the boys in their declensions and conjugations. When sufficient questions have been asked, the attention of the class is directed to the blackboard, and the work of the two writers is corrected by them. Then the text-book is once more opened, and the pupils read a sentence in Latin and translate it into English. This terminates the lesson.

To revert once more to the advantages previously mentioned. The constant practice of answering questions in Latin cannot fail to impress the meaning and form of the words on the pupil's memory. It is wonderful how boys who, no matter how many vocabularies they have learnt by heart, are always at a loss for a Latin word, soon acquire a complete mastery over words and sentences which they have learned in this way. Moreover, the questions seem to have a stimulating effect on some of the hitherto dull and lazy boys. Some previously hopeless duffers, after a few days of this treatment, brighten up wonderfully, and, moreover, the power of accurate reading is quickly cultivated, such blunders as "consilium" for "consulum," "filis" for "filiis" being quickly eradicated. Finally, it is undeniable that the habitually idle pupils are stimulated by this method to participate with interest in the work of the class, and the teacher can feel after each Latin "period" that he has really taught at least 99 per cent. of his form something.

W. G. HARTOG.

High School, Liverpool Institute.

All Numbers are Equal.

IT is a grievous misfortune that the late Professor de Morgan is no longer with us to act as the historian of paradoxers, for surely a rigid proof that all numbers are equal is a paradox after his own heart.

The proof of this startling proposition is based, like all mathematical demonstrations, on axioms and definitions. The definition on which the demonstration immediately rests is given by De Morgan in these words: "What is 7 times 3? It is a number which has a 3 for every unit which there is in 7. The direction then is, substitute 3 for 1 in the formation of 7." ("Trigonometry and Double Algebra," London, 1849, page 115.)

The definition has been adopted extensively by recent authors of text-books on arithmetic and algebra under the name of the general definition of multiplication; it is given in Charles Smith's very excellent "Treatise on Algebra"; I have seen it in a very admirable series of Swedish text-books; it has now crossed the Atlantic, and, in spite of our very stringent immigration laws, has effected a landing, and has appeared in a number of our recent text-books. In an American School Algebra, bearing the date 1900, the following general definition of multiplication is given: "Multiplication is the process of finding the product from the multiplicand in the same manner as the multiplier is formed from unity." This is practically identical with De Morgan's definition. Let us now apply it to a few examples and note the result.

The formation of 3 from unity is exhibited by the equation

$$1 \times 3 = 1 + 1 + 1. \quad (1)$$

Therefore to multiply 2 by 3 we have only to substitute 2 for 1 in equation (1); thus

$$2 \times 3 = 2 + 2 + 2 = 6.$$

Again, the formation of $\sqrt{3}$ from unity is shown in the equation

$$1 \times \sqrt{3} = \sqrt{1+1+1}. \quad (2)$$

To multiply 2 by $\sqrt{3}$ we must substitute 2 for 1 in equation (2); hence

$$2 \times \sqrt{3} = \sqrt{2+2+2} = \sqrt{6}.$$

But the formation of $\sqrt{3}$ from unity may be effected in the manner shown in any of the following equations:—

$$1 \times \sqrt{3} = \sqrt{1^2+1^2+1^2}, \quad (3)$$

$$1 \times \sqrt{3} = \sqrt{1^3+1^3+1^3}, \quad (4)$$

$$1 \times \sqrt{3} = \sqrt{1^n+1^n+1^n}. \quad (5)$$

From equation (3) we get $2 \times \sqrt{3} = \sqrt{2^2+2^2+2^2} = \sqrt{12}$; from (4) we get $2 \times \sqrt{3} = \sqrt{2^3+2^3+2^3} = \sqrt{24}$; and from (5) $2 \times \sqrt{3} = \sqrt{2^n+2^n+2^n} = \sqrt{2^n \times 3}$. Comparing the results we have

$$\sqrt{6} = \sqrt{12} = \sqrt{24} = \sqrt{2^n \times 3},$$

whence $6 = 12 = 24 = 2^n \times 3$. Q.E.D.

I am perfectly well aware that an ingenious mathematician can construct a defence of this general definition, and can frame an interpretation of the phrase "in the same manner as the multiplier is formed from unity" that will meet the requirements of the case. But a definition should, like Cæsar's wife, be above suspicion; it should require no defence, and it should be intelligible without an artificial and forced interpretation.

This general definition finds favour with authors and teachers because it furnishes such an easy way of establishing the rules

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for multiplying fractions and for multiplying algebraic numbers. But surely a protest is called for when so vague, ambiguous, and misleading a definition is found in some of the very best of the text-books.

George M. C. Robson.

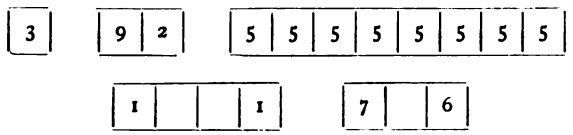
Scranton, Penn., U.S.A.
November 17th, 1900.

An Aid to the Teaching of Decimals.

In the December number of The School World we were informed by Dr. Bryan, in his valuable article on "Common Examination Errors," that "the chief mistakes in answers to arithmetic occur in connection with decimals." He drew special attention to the use of clumsy fractions in preference to decimals and to the frequency of errors in "fixing the decimal point in products and quotients." I cannot but hope, therefore, that some teachers will be glad to hear of a simple little device that has proved successful in making decimals not merely intelligible but attractive.

I ought perhaps to premise that my pupils are girls, of from eleven to eighteen years of age. They generally come to me at fourteen, having just "finished decimals." A few test examples, however, invariably result in such questions as—"Please, what do you do with the point?" or, "Do you count the whole numbers as well as the decimals to find where the point goes in the answer?"

My apparatus consists of a few strips of thick cardboard, three inches wide and of various lengths up to two feet; these are divided into three-inch squares, some of which are filled with bold figures. Using a long strip for ruler, I divide the



blackboard in vertical columns, heading them Units, Tens, Hundreds, &c., and (after the first lesson) Tenths, Hundreths, &c. Before producing my strips I make the pupils compare the Roman and Arabic systems of notation, that they may rediscover the principle of local value and also the absence of a Roman symbol answering to the cipher. The question then arises, "What is the use of ciphers?" and I show that by putting the figures in named columns they could be dispensed with. The strips are slipped backwards and forwards in the grooved ledge on which the blackboard rests; the pupils write down results in the ordinary notation and are led to the following conclusions:—

(1) In a row of figures of the same kind each is worth ten times the one on the right and one-tenth of the one on the left.

(2) To multiply (or divide) by 10,100, ... move all the figures one, two, ... places up—to the left (or down—to the right), and fill up empty places with ciphers.

(3) Ciphers are used to represent empty places.

For preparation whole numbers are given to be multiplied and divided by powers of ten, and the pupils are told to write the figures on strips of paper and slip them backwards and forwards in named columns. (Possibly it would be useless to set such work for boys!

In the second lesson the ruling of the decimal columns is postponed till a division sum, with a power of ten for divisor, has shown the necessity for them. The result of this sum when written down makes it evident that the unit-place must be marked in some new way—hence the decimal point, which may be defined as the starting point for the decimals. A consideration of the method of multiplying two large numbers shows that empty places need not always be represented by ciphers. The rules finally arrived at and dictated to the pupils are these:—

Rules for Whole Numbers and Decimals.

I.—*Ciphers* are used to represent empty places (not otherwise indicated) between two figures, as in 3002, or between a figure and the decimal point, as in 7400 and ·0047. (The point is often invisible.)

II.—*Addition and Subtraction.* Keep the points in a vertical line.

III.—*Multiplication and Division by powers of Ten*; see (2) above.

IV.—*Multiplication.* Put the unit figure of the multiplier under the last of the multiplicand.

Ex. (*a*) 4·56 × 145 = 456 + 182·4 + 22·8 = 661·2

(*b*) £·456 × 20 = 9·12 *s.*

(*c*) ·456 × ·2 = ·0912

(*b*) $20 = 10 \times 2$ ∴ we move all the figures one place up and multiply by 2.

(*c*) $\cdot 2 = \frac{2}{10}$ ∴ we move all the figures one place down and multiply by 2.

V.—*Division by a Whole Number.* Put the decimal point in the quotient as soon as that in the dividend is reached.

Rule for Decimals.

Division by a Decimal. Work on this model:—

$$3\,0149 \div \cdot 073 = \frac{3\cdot 0149}{\cdot 073} \times \frac{1000}{1000} = \frac{3014\cdot 9}{73} = \ldots\ldots = 41\cdot 3$$

No more rules need, I think, be given except on recurring decimals. To show the method for converting a fraction to a decimal I compare the working out of such an expression as $£\frac{4}{5}$.

I might add that the pupils are never allowed to put down an unnecessary cipher, or to talk about moving the point, or to give the rule for multiplying by ten as "Add on a cipher."

Margaret M. Mack.

Brighton,
December 10th, 1900.

Teachers' Notes on English History.

Would you kindly give in the correspondence column of The School World the name of the publisher and the price of Prof. Tout's "Analysis of English History," recommended in the notes on "Oxford History?"

T. Smith.

New Cross, S.E.

Prof. Tout's "Analysis of English History," recommended in the Teachers' Notes, of which I am part author, is published by Messrs. Macmillan, 1s.; but I should like to say, in general, that such information is supplied, with regard to many of the most useful historical works, in the article by Mr. Johnson Evans and myself, entitled, "A Teacher's Library of English History," which appeared in the September, 1899, issue of The School World. May I refer new subscribers to this magazine to that article for general information about books relating to English history?

May I add a request of my own? One or two writers in non-educational papers have been pleased to regard my suggestions as to the use of historical novels (The School World, vol. ii., p. 407) as a more or less diabolical plot for "disturbing the peace of a boy's playtime." I should be pleased to hear the opinion of readers of The School World as to whether they consider it either wicked or impossible to attempt to influence the *pleasure*-reading of their charges out of school hours and to

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concentrate it, as far as possible, on the work which is being done in school. I rejoice to find that I have a fellow-"plotter" in one of Mr. Findlay's staff at Cardiff—Mr. N. L. Frazer, whose article on the subject in the *Educational Review* (December 1st) I should like to commend to the notice of the readers of this magazine.

C. S. FEARENSIDE.

Tenison Avenue, Cambridge.

Corporate Life in Public Day-Schools.

MR. MUNRO'S letter on "Corporate Life in Public Day-Schools" in your December issue deserves more serious consideration than I am able at the end of term to give to it, but I do not like to lose the opportunity of making one or two remarks. I was particularly struck by his insistence on the importance of preparation for municipal and local public life. Teachers in day-schools are in some danger of megalomania, and in their admiration for the "great public school" may aspire to training their pupils to be makers and rulers of the Empire. Such careers will probably in the future, as in the past, belong mainly to the rich, the gentry and the aristocracy. But through our day-schools pass those who will be guardians, members of school boards and technical committees, and of county councils; and the corporate life of a good school, together with the intellectual training of the class-room, should help to make them worthy rulers of country and town.

Mr. Munro is evidently aware how vain is the attempt to work up a good *esprit* before you have got your *corps*, and he makes a number of valuable suggestions for developing corporate life in a class. Does he lay sufficient stress on eating and drinking? Banquets or modest teas help to foster an *esprit de classe*. The difficulties may, in some cases, be inseparable, but in at least one London school—a school in the East End—it is found possible for the different forms to invite each other to tea in a room on the school premises, and the results are said to be admirable.

F. P. B. SHIPHAM.

St. Olave's and St. Saviour's Grammar School,
Southwark. December 17th, 1900.

PRIZE COMPETITION.

Result of No. 12.

IT was scarcely expected that the "Problem in Observational Astronomy" set as the subject of Competition No. 12 would bring many replies, for there were a number of questions to be answered, and the time was limited. Several more or less satisfactory papers have, however, been received, and from them we select the one printed below, by

Mr. L. Bairstow,
54, Redcliffe Road,
London, S.W.,

as the best. Two other papers worthy of especial mention are by Miss Helen Andrews, Friends' School, The Mount, York; and Mr. T. L. Humberstone, the Grammar School, Market Bosworth. We intentionally did not put any age limit upon this competition, or make any stipulation that the answers should be written without the aid of books. The questions could only be satisfactorily answered by students who have watched the apparent movements of the stars themselves, and very little assistance could be obtained from books.

PRIZE ANSWERS.

(1) The window faces north, due north being about one-third from the right. The star is just passing the meridian, as is seen from its reaching its lowest position. Had it been south the curve would have been convex upwards and not concave as shown.

(2) The star makes its first appearance on the left of the figure. Looking towards the pole, the apparent motion is in the opposite direction to that of the hands of a watch, and as the star is crossing the meridian between the pole and the north point, the motion is from left to right.

(3) The window is carried round in front of the star by the rotation of the earth.

(4) There is no means of telling from the given track how long the star would be in traversing it. It is a portion of an ellipse, and gives no clue to the radius of the corresponding circle. [This is due to a slight fault in the drawing. The curve should have been an arc of a circle, but is not exactly true. Assuming it to have been correctly drawn, the time occupied would have been about 2 hrs.—Editors SCHOOL WORLD.] Any star travelling over the same track would occupy the same time in crossing. A star above that track would take a longer time, whilst one below would take less. Those stars above the track, being nearer to the pole, appear to move in less circles, and a greater proportion is cut off by the window frame and *vice versa*. The same proportion of all circles is, however, passed over in the same time by the stars traversing them, and consequently those nearest the pole will keep in view for the longer times.

(5) The star will be in the same position again in 24 hours star time, or about 23 hours 56 minutes of mean solar (Greenwich) time. Star time differs from mean solar time by about four minutes a day. A day by star time is less by that amount than a mean solar day. The difference is due to the revolution of the earth round the sun, by which we get one star day more in a year than solar days. Astronomers use star time in most calculations, since the star is always in the same position at the same time by such a clock as keeps star time. As will be seen by the foregoing, this is not the case when mean solar time is used.

(6) This star could not be the Pole Star, for that star has such a small track as to be unnoticed without the aid of a telescope. The star is below the Pole Star. In order to make calculations the horizon should be observed on the same diagram, and then by measuring the distance from the eye to the window, the angle subtended by the line drawn at right angles to the horizon line from the lower position of the star can easily be determined. The difference between $51\frac{1}{2}^\circ$ and this angle is the distance from the pole.

(7) A star track will be straight if the star observed is on the celestial equator.

(8) A star is a sun, though not necessarily in the same state as our own sun, many of them being at considerably higher temperatures.

(9) Stars shine in the day-time, but the very great brilliancy of the sun makes them invisible.

(10) Such stars as indicated never appear as shooting stars. They are, in general, enormous masses, greater than the sun, whilst falling stars rarely weigh more than a few pounds.

(11) The star would not be visible six months hence from the same window at the same time. It would be crossing the meridian between the pole and the south point and would appear to be exactly on the opposite side of the line joining the observer to the pole. This arises from the difference of times mentioned in (5)

(12) Neither the sun nor the moon could ever appear to follow this track, as in this latitude they never appear in the north. No meteor could follow it. The tracks of these bodies may be in any directions, and are independent of the earth's motion, which causes the apparent track shown. A comet could follow this track fairly closely, since the greater part of its apparently diurnal motion is due to the real motion of the earth.

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OUR CHESS COLUMN.

No. 25.

THE keymove of the two-mover by Mr. Andrew set for competition in the December number of THE SCHOOL WORLD is 1. Q—R7, and the solution is :—

1. Kt—Q1.	2. Q—Q7 mate.
1. Kt—B4.	2. Kt—Kt4 ,,
1. Kt—Q3.	2. Kt x P ,,
1. Kt—B3.	2. Q—R2 ,,
1. Kt elsewhere.	2. Q x Kt ,,
1. P—K5.	2. P x P ,,
1. P—K3.	2. B—K4 ,,

N. B. Dick was the only one who solved correctly the previous three-mover by the same composer. Two other moves than 1. R—KtQ3 were given, but they fail; viz.: 1. R—K3, which fails when Black replies R—R3, and 1. R—Q8, which fails when the play is 1. R—Q8 P—R3 2. R—KKt8, and if R—Kt4 White cannot mate on the move. For instance, 3R x R, P x R, and if 3Q—K5, K—Kt5. Will Messrs. Thomas and Poyser kindly note these flaws in their respective solutions?

The leading scores, up to and including the November competition, are: N. B. Dick, 45; A. V. Poyser, 36; C. F. Russell, 34. The December competition decides who shall receive the Staunton set offered to the highest aggregate scores during the year.

Mr. Andrew tells me that he has started a chess club at the Coopers' Company's Grammar School, Bow; there are sixty-five members, and they intend to play local clubs of medium strength in default of school clubs. Chess in London schools seems to be in its infancy, but it is hoped that more schools will follow the worthy example set by the Coopers' Company's School, and that in the near future there will be a London Schools' Chess League. Of course there is a disadvantage in the fact that the largest ones are day schools chiefly, but at the cost of a little trouble in organisation, I feel sure that much more could be done in London schools than is the case at present.

There is a tournament being carried on at the Coopers' School, in three sections, and this appears to be the most effective way of keeping up an interest in chess in schools. One of the chief difficulties in the arrangement of tournaments is the grouping of the players into sections of, as far as possible, equal strength. I am not sure that the giving of pawns or pieces is as effective (in the case of boys) as the giving of one or more moves to a player of inferior strength. In my own case, I find that it is better to allow a boy to make, say ten moves, before I make one. It teaches him the value of development if it does nothing else. But with some of the stronger players I should soon be made to feel very small in conceding such odds. At Manchester Grammar School they have a "sliding-odds" tournament. There are many sections, with few boys in each; every game a boy wins puts him up one section, and at every loss he takes refuge in a lower section. At the end of a session a boy usually finds his proper level. I should like to hear the opinions of players on this arrangement: personally I have not yet tried it, but it seems feasible enough.

The games in our Inter-School Correspondence Tournament have ceased during the holidays; they will be in full swing again by the end of the month: one or two of them, I believe, are nearly approaching completion. I hope to publish some of them during the course of the year, with notes.

The other day I came across an interesting specimen of the Allgaier gambit. Black was one of those persons who do not "believe" in the books!

1. P—K4.	1. P—K4.
2. P—KB4.	2. P x P.
3. Kt—KB3.	3. P—Kt4.
4. P—R4.	4. P—Kt5.
5. Kt—Kt5.	5. P—KB3?
6. Q x P!	6. P—KR4.
7. Q—B5.	7. P x Kt.
8. Q—Kt6 ch.	8. K—K2.
9. Q x KtP ch.	9. K—K1.

10. Q—K5 ch and wins the rook.

The correct move for Black is 5. P—KR3.

Here is another instructive game at the same opening.

1. P—K4.	1. P—K4.
2. P—KB4.	2. P x P.
3. Kt—KB3.	3. P—Kt4.
4. P—R4.	4. P—Kt5.
5. Kt—Kt5.	5. P—R3.
6. Kt x P.	6. K x Kt.
7. P—Q4.	7. P—Q4!
8. B x P.	8. P x P.
9. B—B4 ch.	9. K—Kt2!
10. Kt—B3	10. Kt—KB3.
11. Q—K2.	11. B—Q3.
12. Castles KR.	12. R—B1.
13. B x P ch.	13. K x B.
14. Q—K3 ch.	14. K—Kt3.
15. Q—Kt5 ch.	15. K—R2.
16. Kt x P.	16. Kt x Kt.
17. B—Kt8 ch.	17. K x B.

18. Q—Kt6 and draws by perpetual check.

Note that if Black play 17R x B White wins at once.

Readers will be interested in the appended extract from *The New South Wales Educational Gazette* of October 1st, 1900:

The following game is a capital example of Morphy's incisive style. The Duke of Brunswick and Count Isouard played Philidor's opening. 1. P—K4, P—K4; 2. Kt—KB3, P—Q3; 3. P—Q4, B—Kt5; 4. P x P, B x Kt; 5. Q x B, P x P; 6. B—QB4, Kt—KB3; 7. Q—QKt3, Q—K2; 8. Kt—B3, P—B3; 9. B—KKt5, P—Kt4; 10. Kt x P, P x Kt; 11. B x KtP (check), Kt (Kt square)—Q2; 12. Castles (queen's side), R—Q1; 13. R x Kt, R x R; 14. R—Q1, Q—K3; 15. B x R (check), Kt x B; 16. Q—Kt8 (check), Kt x Q; 17. R—Q8 (mate).

Black might have escaped disaster by playing P x P on the third move, or Q—Q2 on the sixth.

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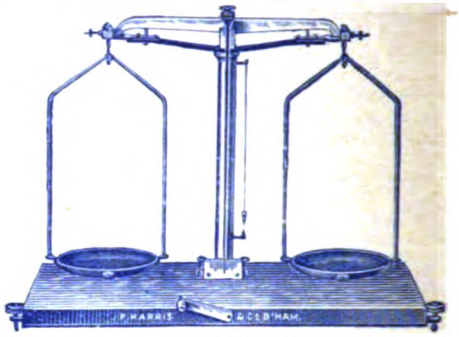

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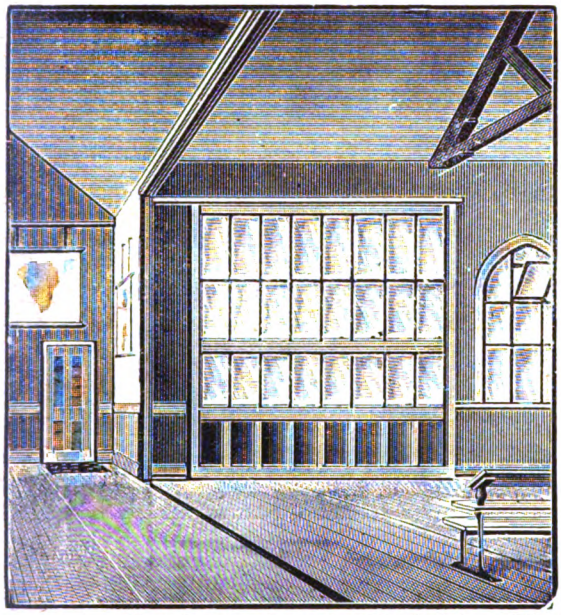

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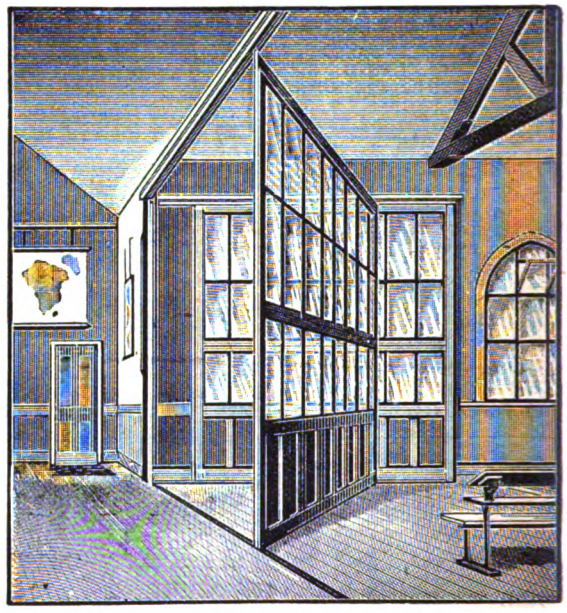

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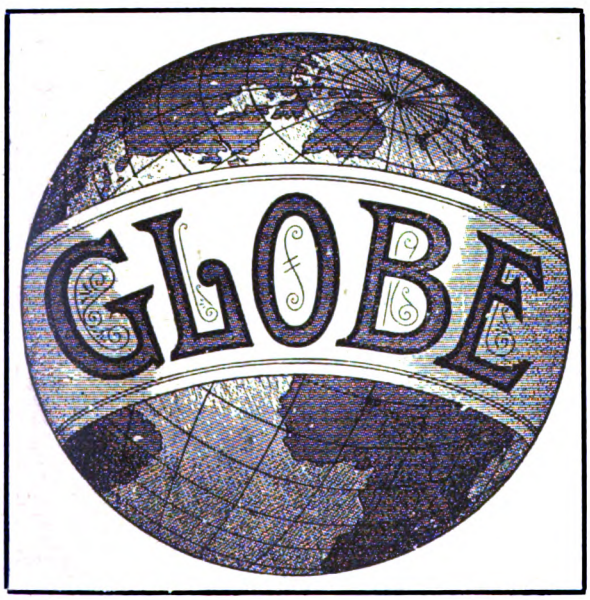

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THE work of the Evening Continuation Schools under the London School Board has been growing steadily since it began in 1882, and now has a strong hold on a large portion of the London population. Moreover, special interest has been aroused in it by the controversies which took place prior to the late School Board election, and by the statement made by Mr. Justice Wills (when giving his judgment as to the legality of one portion of the work) that the whole of the work so far as it dealt with pupils over the age of 16 or 17 was illegal.

I am glad, therefore, to have an opportunity of making clear what this work is, more especially as it will doubtless be continued and extended pending the decision of the House of Lords. I am glad also to think that my statement will come before those who are specially interested in secondary schools, for I have little doubt but that I shall be able to convince them that, however impossible and undesirable it may be to attempt to draw a hard and fast line between primary and secondary education, in our evening schools at any rate, there is nothing of which they need be jealous, but rather that the work demands their sympathy and support.

During the eighteen years we have been at work the number of schools has grown from 83 to 368, and of pupils admitted from 9,064 to 124,200; the greatest increase being in the year when the fees were abolished, the numbers growing from 57,586 to 109,121.

These figures are an indication of how many there are in London of those who, working during the day, are willing to give part of their evening leisure to some kind of study: and I also state, without any fear of contradiction, though I have no official figures at hand, that the numbers attending the various technical institutions supported or subsidised by the County Council, as well as the little private and religious societies and clubs, etc., which they help, so far from diminishing, have increased while we have been increasing. The timid County Councillors, afraid of "overlapping," had not realised how vast a population there was still untouched. The real fact is that, when every trade and industry of men or women has its technical school with advanced and research work, there will still be an ample demand for the more general humanising and domestic work of our evening schools; much more is there need for them now while the Technical Board is still in its infancy.

A few figures will show what subjects last year attracted the young Londoner for a few hours away from his hard-earned leisure, for we are dealing with those whose main business is bread-winning, and many of whom have to work for an inordinate time at that business: Shorthand, 33,000; Arithmetic, 31,000; Book-keeping, 23,000; Commercial Correspondence, 2,800; Writing, 12,000; Composition, 18,000; Geography, 14,000; History, 5,000; French, 19,000; German, 1,400; First Aid, 14,000; Home Nursing, 3,000; Woodwork, 14,000; Needlework, 16,000; Vocal Music, 13,000; Gymnastics, 17,000; Swimming and Life-saving, 12,000; Drill, 13,000; English Literature, 3,000; Cookery, 6,000; Laundry Work, 1,300; Drawing, 10,000; Science, about 10,000.

The choice of subjects is left largely to the pupil, though the wise teacher is becoming more and more a power to guide the pupil in this matter. The enormous run on Shorthand is a curious phenomenon. Do what we will, we cannot quench the desire for attempting it. But then all quasi-commercial subjects are popular. It is not only on account of its commercial value that so many attempt to learn French. I have in my mind one class in a school in the very poorest part of St. Luke's, where some twenty-four rough girls come steadily to French for the simple love of the thing and the teacher. By-and-bye, more than the present 180 commercial students will want Spanish and Portuguese. Much was made by the enemy at the late election of the fact that we taught Russian—we do to twelve pupils: it is the work of a volunteer teacher. But the people of London who want a good opening for their sons would do well to demand more classes in this language—besides, what a delight to read Tolstoy at first hand rather than in a bad translation of a French version.

The Ambulance and Home Nursing classes, to

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which may be added a few classes on the simple Laws of Health, which I hope will increase in numbers, are among our most valuable pieces of work. They are taught by doctors and trained nurses, and followed by a searching examination, for which certificates are given. I could give from my own knowledge many instances of the practical good resulting from them. These lessons appeal to the roughest as well as to the refined, and I hope they will be widely extended.

The Woodwork classes are also extremely popular with the lads and young men. How good the work is anyone can see who attends our Annual Exhibition.

Our Needlework, which, according to the somewhat pedantic phraseology of the Board of Education, is divided into needlework as applied to "garments," needlework as applied to dresses, and needlework as applied to "headgear," is also of the greatest use to the young—and married—women. Hundreds of them are taught to make their own underclothing, frocks and hats. I am sorry for any Government (whatever may be the final legal decision) which does not allow this work to continue.

We are gradually forming choirs in every school. Several this Christmas have been singing carols in connection with the *Referee* Children's Dinner fund. We also have a few special Music classes, by means of which our own day-school teachers are enabled to add the old notation to their Tonic Sol-fa acquirements.

The Gymnastic centres, of which there are 84, have all been started during the last three years; they are places for serious work, invaluable to young men and young women who have to lead sedentary lives.

Our English Literature classes have also only recently been added; they were mainly intended to introduce real classics to the readers of the *London Journal*, *Tit Bits*, &c. The lecturer was to tell the story of the play or the novel, and to induce the pupils to buy a cheap edition; in this way they were in many cases successful. The roughest boys and girls in Deptford were enthralled by the story of Oliver Twist, and a couple of hundred young men and women from the shops and business houses in Hackney have listened regularly week by week to lectures on Shakespeare; Bethnal Green boys will tell you the story of Hamlet, and give you their opinion on the meaning of it; Whitechapel girls will stand out and act to you with splendid intonation and real power a series of short scenes from "Twelfth Night." For two years now some twenty schools have sent selected companies to act, first the Trial Scene from "The Merchant of Venice," then the Play Scene from "Hamlet," and Mr. Ben Greet, who judged them, has expressed himself delighted with the result. This good work must continue. Mr. Poel, of the Elizabethan Stage Society, has just joined our ranks, giving us the benefit of his unique knowledge of the English drama. Here there is a fine opening for any of your readers, secondary-school teachers who, in addition to a full literary knowledge, possess the power of expressing themselves and holding the attention of pupils not yet in love with the English Classics. Our most successful teacher of this subject came from the "secondary" ranks.

In addition to the schools the curriculum of which I have indicated above, there are sixteen schools specialised as commercial schools, where persons (male or female) engaged in the City can get trained at night in subjects which will be valuable to them, and eventually to the nation—commercially. Most of these pupils prepare for the examinations of the Chamber of Commerce or the Society of Arts, and the subjects taken are mainly those required by the examiners. Before Christmas there were 8,000 pupils on the roll of these schools. There are also nine special schools for Science and Art, with a roll of 6,000, working chiefly at subjects which are examined by South Kensington, but engaged earning their living during the day, many of them being our own teachers.

Besides these, there are nine little schools for the deaf, with a roll of 280. I am confident that we can continue this work better than any other body could.

Now in giving these facts and figures I suffer from no illusions; we are dealing with people whose main work is bread-winning. We have therefore inevitably to put up with an irregularity of attendance which, to an ordinary day-school teacher of any grade, would be heartbreaking. That irregularity can be lessened by various expedients, but it will never be got rid of till the State demands from the employers so many hours a week for the mental, technical and physical training of its young citizens up to the age of 21.

What kind of pupils come to your schools? I am sometimes asked. The answer is, all kinds of London bread-winners. There is a delightful story going about of an officer in the Engineers who could only learn what he wanted from us; of an English lady who married a German, who came to us to learn how to talk to her husband; of an old man with an invention who came to us in order to secure his patent. And, frankly, we ask no questions as to the social position of our pupils; we feel that if here and there well-to-do ratepayers like to come to us—well, their rates are heavy, and they are very wise to use their own schools for their own education. But roughly our schools, both day and evening, classify themselves by neighbourhood. In well-to-do suburban neighbourhoods you get one sort, in rough poor neighbourhoods you get another sort; both alike are welcome.

I go to a school in the neighbourhood of Deptford; I casually meet the excellent manager, who spends his spare time in hunting up the rough fellows at the waterside. I go in and find a hall full of splendid athletic young men at work in the gymnasium; I see a lot of slouching lads sitting round. The responsible teacher, a real live man, the secret of all success in evening work, says, "These chaps you see on the bars were a year ago like those sitting round." I go into a class-room and

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find some forty rough lads listening to a history lesson, evidently interested, though most of them are in their shirt-sleeves. I go into another room, and find a dozen at work drawing. I suppose Mr. Justice Wills and the City Corporation would object; anyhow, it is humanising. I go into the fourth room, and meet the doctor about to begin an ambulance class. "No keener class anywhere," he says. And that is the curriculum of that school: the majority of the pupils over 17, and therefore "illegally" taught, unless they pay two guineas a year! It would be a pity—it would not be to the nation's advantage—to close that school.

A twenty minutes' walk takes you to one of our very best Science and Art and Commercial Schools —all spick-and-span students, though many of them only earning small wages. Another responsible teacher full of energy; many subjects being studied—Physiology, Hygiene, Chemistry, Building Construction, Magnetism, Mathematics, Typewriting, Advanced Shorthand, and what not, with a splendid lesson in French on the Gouin system, and a course of lectures on Literature on "off" evenings. And these are two extreme types of some 380 schools.

There is one evening-school institution to which I must refer, the "social evening," to which in most schools the pupils are invited once a month. These social evenings, and the preparation for them, led to the absurd statement that our evening schools are mainly places for dancing. If they were, and if every London lad and lass could be compelled to learn to dance, there would be no great harm done. But the fact is that once a month we give the teacher the use of the school hall, and a dance, sometimes with a few songs interspersed, takes place. I am certain that these "socials" have a civilising effect on the pupils and the neighbourhood, and are a valuable adjunct to the ordinary school life.

Now surely there can be nothing more ridiculous than the statement that in all this we are trenching on the province of the secondary schools; that we are doing the work of the Technical Board; that we are suffering from "megalomania," and want to make ourselves into a London University! It is quite true that by the Act of 1890 we are distinctly told that the condition applicable to day schools, that "the education given must be in the principal part elementary," does not apply to evening schools; but the mere fact that 99 per cent. at least of our pupils are working during the day, and they can only get in our evening schools a couple of hours any evening on generally not more than three evenings a week, makes it absurd to talk of there being any jealousy between the secondary schools and us; and equally absurd, I think, that any "Body" which the Government may create to manage secondary schools should have also to manage schools so different from them as ours are.

It is also true that the law allows us to give technical instruction, but the limitations of our buildings prevent us for the most part from doing so. The great trades and industries must look to the Technical Board for that advanced training and research which is so necessary, but which is only in a small degree at present forthcoming; our province is at once humbler and nobler. The domestic arts are ours—the languages, the literature, the science, which is the basis of technical skill, the manual training, the physical development, above all the humanising and the helping of those who belong to no skilled trade at all—these are ours. Ours, too, are the commercial schools, with which we were the first in the field. It is a work of vital national importance, which no other public body had attempted to touch.

And as for megalomania, no one who knows how little has been done compared with what remains to be done can suffer from that.

Going about as I have done during the last twelve years all over London, visiting schools, has certainly impressed upon me the value of our work, and made me feel how disastrous it would be to do anything to thwart it, but it has also made me feel, perhaps more than others have felt, how many there are untouched by any of us. We really cannot afford to be jealous of each other, or to keep trying to find legal means for hindering each other's work.

THE QUESTION OF HOME-WORK.

By W. C. FLETCHER, M.A.
Headmaster of Liverpool Institute, Liverpool.

THE purpose of home-work seems to be twofold; first, by the devolution of preparation and practice to give more time in school for actual teaching, and, secondly, to give boys the opportunity of learning to work alone, without direct compulsion or even guidance. The relative importance of these varies according to age and nature of work, but both need to be borne in mind.

HOME-WORK SHOULD GAIN TIME FOR CLASS-TEACHING.

To the saving of time there are limits. The time spent in school-work daily must not exceed certain limits, hard to fix, but not to be transgressed under serious penalties.

It is possible to give too much teaching, and boys would sometimes be better for doing preparation themselves in school instead of having it done for them by the master.

It is possible to spend so much time over the correction of home-work that the loss exceeds the gain.

There can, I think, be little doubt that, especially with young boys, we err in the length of the school day by excess rather than by defect. Our knowledge on this point is still unsatisfactory, but it is safe to say that when a boy of 16 has had five or five-and-a-half hours in school another two

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hours' work at home is the limit of what he should do. Younger boys should do much less, and under 10 or even 11 probably none at all. Longer hours mean slackness over work, or for the more conscientious boys over-pressure.

In some subjects, the early stages of language teaching, for instance, all the time available can with advantage be spent in actual teaching and oral work in class; but in others, mathematics, perhaps natural science, it is possible to teach too much and not to leave boys alone sufficiently. Whether further practice at home is advantageous, then, depends on the time allotted in school and the quantity of work desired.

Written home-work must, of course, generally be examined, or careless and slovenly habits are encouraged. If a master takes work home and gives it back to a boy afterwards, much of the effect of correction is lost. It should be looked at on the spot as part of the lesson. Unless this can be done quickly, and without leaving boys sitting idle (a mistake sometimes made), there is much waste.

These considerations show how difficult it is to lay down general rules. Home-work must be set, as far as possible, to help the lessons; its nature will depend on the nature of these. In mathematics it is easy to choose suitable work, according to the age and capacity of the class. It may be some straightforward work set for practice merely, a few general questions to keep up back work, or some questions to be thought over and attempted which will make the next lesson interesting and fruitful. The construction of solids out of cardboard, the plotting of graphs, the graphical solution of equations or of geometrical and mechanical problems are especially good for the purpose. All such work needs patience, care and leisure, and is best done without help. It has the further advantage that it can be very easily examined.

In the days when the memorising of facts, whether of grammar, history or science, formed the great part of education, naturally there was much repetition work that could be done at home, and time in school was mostly spent in hearing it. In the reaction from this perhaps we have gone too far in the other direction, and there is too much teaching and explanation, and the responsibility of mastering a subject is taken too much off boys' own shoulders. Such work as it legitimately occurs—and it forms an element in all subjects—may properly be set for home preparation, provided it is adequately tested.

Of language teaching I speak with hesitation; but one evil I have met with, the setting of translation to be prepared, of which a boy can say, with some colour of truth, that he "cannot make it out." He is sometimes told (as evidence of effort) to make a list of words if he cannot make sense, a wholly wasteful and mischievous process. He should feel that, if he has not made sense, he has done nothing. No work should be set which cannot be tolerably well done. In the early stages of language teaching the work proper to be done at home is the revision and mastering of work already done in school, but so much depends on the style of teaching that it is impossible to lay down general rules.

Home-work should Teach Boys to Work Alone.

It is, of course, most important that boys should learn to work for themselves, first without constraint and gradually without guidance. Excessive teaching—the teaching of too much detail—impairs a boy's self-reliance. It tends to relieve him from the drudgery necessary to any real progress, and to make him disinclined to face such drudgery. A class may be taught a piece of verse, or grammar, or Euclid by constant repetition and questioning in class, but it is even more important that boys should develop the habit of mastering it for themselves. The better boys, too, need opportunity not only for this routine work, but for inquiry. The much-vaunted heuristic method is sometimes supposed to be a discovery affecting science alone, but it has, in truth, a bearing on mathematics certainly, probably on literary and linguistic subjects also. Opportunities for such work occur, and will be seized by a skilful teacher. As boys grow older it is this view of home-work, as giving occasion for self-help, which becomes the more important.

Things to be Avoided in setting Home-work.

So far of home-work in general and as it affects one master. If, as under the form system, boys are chiefly under the care of one man, there is no excuse for excess or defect of work. If, however, boys have work to do for several masters there will be trouble unless care is taken. This seems essentially the headmaster's work. He must arrange a suitable time-table, and will need to inquire from time to time to make sure that there is no abuse. A special difficulty comes from work that is set only once or twice a week. Boys will, if they can, put work off to the last moment, and it not infrequently happens that over-pressure complained of arises simply from the fact that several odd lessons are left to be done on one night.

In a day school certain other difficulties arise. There is, to begin with, the waste of time and the fatigue due to travelling, perhaps increased by irregular meals. This, in some cases, makes any home-work at all a very serious burden. We cannot make general arrangements to suit everybody, but allowance must be made for such exceptional cases.

Then there are the varying home conditions and the wishes of parents to be considered. These, again, cannot alter our general procedure, but have to be borne in mind in dealing with particular boys. Finally, the master must be on the alert to set home-work which reduces the risks of copying to a minimum.

Some General Rules.

In general the following truths should be observed:—

It is better to set too little than too much.

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No work should be set which cannot be well done by the bulk of the class. Home-work should be such as can be easily and quickly examined.

Written home-work should, as far as possible, be looked over in school with the boy at hand, but care must be taken that the class does not sit idle while this is being done.

With young boys and middle-school classes the work set should be very definite in amount, such as all can do, and should be pretty rigorously exacted from everybody. This means that the abler boys will have an easy time. But there is little harm in this, for they are just the boys most likely to make a good use of leisure and to suffer most intellectually and physically from the want of it.

As boys grow older greater variety should be introduced in home-work. There must not only be routine work for the average boy, but opportunity must be given for the abler boy to do more, both in quality and quantity.

Impositions are to be avoided as far as possible. In general such tasks are an eloquent testimony to the inefficiency of the master. Either he sets work unwisely or examines in such a way as to give a shirker a chance of escape, or he has not the influence with his boys which he ought to have. This check on impositions is even more important in a day school than in a boarding school. A boy living at home has other claims than those of school which should not be interfered with more than is necessary.

THE KING OF PRUSSIA'S EDICT ON SECONDARY EDUCATION.

By A. KAHN, M.A.
Commercial Department of University College School.

THE King of Prussia on the 26th of November last issued an edict in which he lays down lines of reform to be followed by the Education Department in the further development of the Prussian System of Secondary Education for Boys.

For the sake of clearness it is well to give the following classification of Prussian Secondary Schools for Boys, which has existed since the year 1892:—

A.—CLASSICAL SCHOOLS:

(1) The GYMNASIUM with a nine years' course (leaving age about 19).

(2) The PROGYMNASIUM consisting only of the lowest six classes of a gymnasium.

B.—SEMI-CLASSICAL SCHOOLS (in which Latin, but not Greek, is taught):

(1) The REALGYMNASIUM, with a nine years' course (leaving age about 19).

(2) The REALPROGYMNASIUM, consisting only of the lowest six classes of the Realgymnasium.

C.—MODERN SCHOOLS.

(1)[1] The OBERREALSCHULE, with a nine years' course (leaving age about 19).

(2) The REALSCHULE, with a six years' course (leaving age about 16).

I. The Gymnasium is the only school that leads to all departments of a German University; pupils proceeding from the Realgymnasium can enter the University as students only of Mathematics, Natural Science and Modern Languages; whilst there is a further restriction to Mathematics and Natural Science for pupils from the Oberrealschule. In respect of all other privileges, such as qualification for one year's military service, entrance to technical schools, the Civil Service, &c., the schools may be arranged in the following ascending order.—

Second Grade School (with a six years' course), the Oberrealschule, the Realgymnasium, the Gymnasium; and it is to be noted that the privileges attaching to one class of school include all the privileges of the preceding type.

It is not surprising then that the classical schools have far more pupils than all the other schools put together. Many a father chooses the Gymnasium, not because it is educationally best adapted for his son, but because it shuts out no career from him.

The great monopoly possessed by the Gymnasium has been a serious obstacle to the development of first-grade modern schools. Whereas in the winter half-year, 1895-6, the number of pupils in the highest class of the 273 Gymnasien was 4,508, it is significant that the number of pupils in the highest class of the 86 Realgymnasien was only 864, and the number of pupils in the highest class of the 24 Oberrealschulen only 163. [See "Special Reports," vol. iii., p. 127.]

First and foremost, then, the King's Edict declares the equality of the three kinds of first-grade school in respect of general mental culture.

The practical applications of this principle are not laid down precisely or consistently. Certain it is that the rights of the Gynasium will suffer no curtailment; it is equally certain that while it is intended to extend the privileges of the two other types of schools, there will be no full emancipation from the disabilities under which they work. The Edict recognises that certain professional courses of study impose preliminary acquirements outside the scope of the one or other type of school; and the intention seems to be to facilitate the supplementing, when necessary, of the leaving certificate of the modern schools by certificates in subjects outside their curriculum. A pupil of the Oberrealschule, for instance, desirous of entering the Faculty of Law, will possibly be expected to satisfy a test in such a knowledge of Latin and Greek as is absolutely essential for his professional course. No objection could be taken to so reasonable a requirement, but the principle of equality would seem to demand also from the Gymnasium supplementary certificates for those higher courses of study for which the curriculum

[1] The Oberrealschule came into existence in 1882.

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of the classical school is an imperfect preparation. The Edict in this connection merely recommends that especially those pupils of the Gymnasium who intend to take up Technology, Natural Science, Mathematics or Medicine, should be induced to avail themselves diligently of the optional instruction in *Drawing*.

II.—The recognition of the principle of equality of the Gymnasium, Realgymnasium and Oberrealschule is to make possible a stronger accentuation of the characteristic features of each type. In 1892 a considerable reduction was made in the number of hours devoted to Latin, both at the Gymnasium and the Realgymnasium; the King now does not discountenance an extension of *Latin* teaching. At the same time, His Majesty is convinced of the increasing importance of *English*, and he is desirous that this subject should receive greater attention in the Gymnasium. The practice of all Gymnasien (with the exception of the few reformed schools) has been to commence Latin in the *Sexta*[1] (the lowest class), French in the *Quarta* (the third from the lowest), Greek in the *Untertertia* (the fourth from the lowest), and to teach English as an optional subject in the highest three classes. The King now recommends English to be taught as far as Untersekunda as an alternative subject to Greek (for three years therefore); and English to take the place of French as an obligatory subject, French the place of English as an optional subject, in the highest three classes of Gymnasien situated in towns where local conditions would warrant the change. In respect of the Oberrealschule more room is to be found for *Geography* in those time-tables that permit of an extension.

III.—The King is alive to the great progress that has been made in the various departments of instruction since the issue of the revised curricula in 1892. But more is required. Headmasters are warned against attaching the same importance alike to all branches of the curriculum. The character of each type of school is to determine the relative prominence of the subjects. The maxim *multum non multa* is to be acted upon.

(*a*) *Greek.* Useless forms are to be kept outside the sphere of instruction. Æsthetic insight and comprehension of the relation of antiquity to modern culture are to be regarded as of real import.

(*b*) *Modern Languages.*—Great stress is to be laid on readiness of speech and the clear understanding of current authors.

(*c*) *History.*—The royal decree of May, 1889, contains the following noteworthy passage[2]:—

"National history will have to deal especially with the history of our social and economic legislation and development from the beginning of this century to the present social enactments, in order to show how the Kings of Prussia have at all times regarded it as their special mission to bestow their fatherly protection on and to uplift the material and spiritual welfare of those of the population who have to live by the labour of their hands, and how in the future, as in the past, the working classes can only look for justice and the safety of their earnings under the protecting care of the King at the head of a well-ordered State. And especially from the point of view of practical utility, by striking references to actual facts, it should be made clear even to young people that a well-ordered constitution under secure monarchical rule is the indispensable condition for the protection and welfare of each individual, both as a citizen and as a worker; that, on the other hand, the doctrines of social democracy are, in point of fact, infeasible, and that, if they were put into practice, the liberty of each individual would be subjected to intolerable restraint even within the very circle of the home. The ideas of the Socialists are sufficiently defined through their own writings for it to be possible to depict them in a way which will shock the feelings and the practical good sense even of the young."

Effect was given to this royal recommendation in a Government regulation of July, 1889.

The present Edict takes note of the two defects which still make themselves felt in the teaching of history — the neglect of important periods of ancient history, and the lack of detailed thoroughness in the treatment of the German history of the 19th century, with its elevating memories and great accomplishments for the Fatherland.

(*c*) *Geography.* — Both in the Gymnasien and Realgymnasien the instruction is, as far as possible, to be entrusted to specialists.

(*d*) *Natural Science.* — Observation and experiment are to receive wider scope; more frequent excursions are to add life to the instruction; in the case of physics and chemistry the aspects of practical application and technology are not to be neglected.

(*e*) *Drawing.*—Skill in rapid sketching is to receive attention.

(*f*) *Physical Training.*—Better results are to be aimed at in the matter of physical exercises; the time-table is to be drawn up with greater regard to hygienic exigencies; the intervals for recreation are to be increased considerably.

IV.—A great stimulus to secondary education in Germany has always been the military certificate granted upon the completion of a second-grade course, or of the first six classes of a first-grade school. The certificate entitles the holder to substitute one year's military service with enhanced status for the ordinary term of two years, formerly of three years. Before 1892 the right of promotion to Obersekunda (7th from the bottom) at first-grade schools carried with it the certificate as a matter of course. There was no special Government examination; the teachers themselves judged the fitness of the pupil on the year's work. With the revised curriculum a searching Government examination (called *Abschlussprüfung*) was instituted, the object of

[1] The names of the classes (starting from the bottom) of a first-grade secondary school for boys are :—Sexta, Quinta, Quarta, Untertertia, Obertertia, Untersekunda, Obersekunda, Unterprima, Oberprima.

[2] See "Problems in Prussian Secondary Education for Boys." By M. E. Sadler. Vol. iii., Special Reports, p. 104.

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which was to encourage a certain completeness in the lower portion of the first-grade school, and, by making the passage to the upper division more difficult, to check the stream of University aspirants.

The examination, says the Edict, has not had the results anticipated. It has in particular had the effect rather of increasing than diminishing the number of University students. The King desires it to be abolished.

According to the *Frankfurter Zeitung* of January 7th, the Minister of Instruction has already ordered the discontinuance of the examination in question.

V.—In 1891 the authorities at Frankfort received the Ministerial sanction to special curricula at the Municipal Gymnasium and at the two Realgymnasien of the city. Several other towns have since been allowed to adopt the Frankfort curricula. The reform secured a common basis extending over three years for all types of secondary schools, by beginning French in the lowest class, and postponing Latin to Untertertia (4th class from the lowest); further, by postponing Greek in the Gymnasium to Untersekunda (6th from the lowest), and English in the Realgymnasium to the corresponding class, a common curriculum for the first five years was made possible for the classical and semi-classical school.

The Frankfort experiment was not entirely a novel one. Already in 1878 a scheme had been sanctioned by which the "Realgymnasium and Realschule," conducted under one roof in Altona, received a common preliminary three years' course.

The King pronounces himself favourably with regard to the reformed organisation. Socially he considers an estimable advantage to be gained by the common foundation obtained; and he desires the experiment to be continued on a broader basis.

In conclusion, the King expresses the hope that the new regulations to be made in accordance with his Edict may be welcomed by both the adherents of the Classical and the advocates for the New Learning.

The Secondary Schools of Germany.—Through the labour of generations, the public higher schools for boys in Germany stand, from certain points of view and in many important respects, as models to the world. They are unrivalled in their high level of many-sided attainment. Thought has been lavished on the planning and concentration of their studies. The quality, the range and the method of their teaching are under the watchful care of State inspectors, themselves experienced in the work of secondary education. All the schools are thus scrupulously kept up to an exacting standard of excellence. The teachers, almost all of them university men, are required to have passed through a special course of professional training. On appointment to a post in the public schools the teachers become civil servants and are entitled to stipends, to which are attached regular increments proportionable to their length of service, as well as pension rights and claims to compassionate allowances for their widows and children.—M. E. Sadler.

TYPICAL SCHOOL TIME-TABLES.

IV.—Bolton Central Higher-grade Board School. School of Science Department.

IN continuing the series of typical school time-tables we are able this month, owing to the courtesy of Mr. John Thornton, M.A. (Lond.), the Headmaster of the school, to present our readers with one of the best examples of the highest department of a large provincial Higher-grade School. The time-table is of especial value since it makes quite clear the nature and scope of a "School of Science" in connection with the South Kensington branch of the Board of Education.

There is a peculiar appropriateness about the publication of this time-table just now. The decision in the "Regina *v.* Cockerton" case, in which Justices Wills and Kennedy recently pronounced judgment, is being considered by educationists of all shades of opinion. The decision has provoked much discussion, and will not be allowed to rest in its present position. But while awaiting a final judgment it is worth while to point out that the work of such schools as that of the School of Science Department of the Bolton Higher-grade School has for many years proved very suitable for boys and girls of elementary schools who, having passed through the standards, are permitted to continue their education until the age of sixteen. As the Senior Chief Inspector pointed out in the last report of the Board of Education, South Kensington, the curriculum of these schools of science provides an admirable preparation for the work of technical institutes, and for this reason alone they deserve encouragement.

It will make the time-table clearer to explain that Division I. is the highest class, and consists of students who are staying for a third year in the department. Division II. consists of second-year students and is divided up into three separate classes. In the same way, the six classes which make up Division III. are composed entirely of first-year pupils. When an alternative is given for any of the classes, it means that such a class is made up of two sections which take their practical work in science alternately.

Only boys and girls are admitted to the school who know well the work of the six standards of the "Code" of the Board of Education, and who engage to stay through the school year. It will be found by a study of the time-table that ten hours a week are devoted to literary subjects and the chief part of the remaining time to practical and theoretical science, including manual instruction for the boys and cookery for the girls of the first and second years. The courses are those laid down by the Board of Education, South Kensington, and are intended to provide a thorough and progressive training in science, combined with suitable literary and commercial instruction.

Pupils attend the gymnasium after 4 p.m., or on Saturday mornings, according to a special time-table.

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BOLTON CENTRAL HIGHER-GRADE BOARD SCHOOL.

TIME TABLE OF "SCHOOL OF SCIENCE" DEPARTMENT.

	Division	9—9.40	9.40—10.45	11—12	12—2	2—3	3—3.50	3.50—4.40
MONDAY.	I	Scripture	French Conv	Maths		Chemistry	Practical Chemistry	
	II (*a*)		Maths	Chmy		Practical Chemistry		
	II (*b*)		Maths	Physics		Practical Physics		
	II (*c*)		Pract Chmy or Maths & French			Maths	History	English
	III (*a*)		Maths	Geom Drawing		French Conv	Geography	History
	III (*b*)		Maths	English		French	Manual Instruction (3—5)	
	III (*c*)		Pract Physics or Fr	Physics		Geography	French Conv	English
	III (*d*)	Pract Chmy	Maths	French		Maths	Chemistry	History
	III (*e*)	Scripture	Arith	Chmy		Maths	History	English
	III (*f*)	Scripture	Maths	Geography		Chemistry	Cookery	
TUESDAY.	I	Scripture	Maths	French		Physics	History or Practical Physics	
	II (*a*)			Physics		Practical Physics		
	II (*b*)			Chmy		Practical Chemistry		
	II (*c*)			Geom Drawing		French	Geography	English
	III (*a*)		Pract Chmy or Math	Physics		Chemistry	Manual Instruction (3—5)	
	III (*b*)		Maths	Geom Drawing		French	Geography	Chemistry
	III (*c*)		Maths	Geom Drawing		Maths	Cookery and Needlework	
	III (*d*)		Math or Pract Physics			French	Coml Arith	Geography
	III (*e*)	Math or Pract Chmy		French		Physics	Geography	Shakespeare
	III (*f*)	Scripture	Maths	Geometry		Physics	Maths or Practical Chemistry	
WEDNESDAY.	I	Scripture	Maths	Geom Drawing		Chemistry	Geography	French
	II (*a*)			French		History	Drawing	
	II (*b*)			Geometry		French	Drawing	
	II (*c*)			French Conv		Maths & French or Practical Physics		
	III (*a*)			Prac Physics or Fr		Geom Drawing	Drawing	
	III (*b*)			Physics		Drawing	English	History
	III (*c*)		Fr or Prac Physics	History		Chemistry	Practical Chemistry or French	
	III (*d*)		Drawing	Physics		French	Cookery	
	III (*e*)		Prac Chmy or Math	Geom Drawing		Maths	Drawing	
	III (*f*)		French Conv	History		Drawing	French	Shakespeare
THURSDAY.	I	Scripture	Maths	French Conv		Physics	English or Practical Physics	
	II (*a*)	Com Arith	French Conv	Geom Drawing		Geom Drawing	English	Shakespeare
	II (*b*)	Essay	Maths	French Conv		Geom Drawing	Geography	English
	II (*c*)	Scripture		Geom Drawing		Chemistry	Manual Instruction or Cookery	
	III (*a*)	Scripture		French		Physics	Pract Physics	French & English
	III (*b*)	Essay		Coml Arith		French Conv	Geom Drawing	Chemistry
	III (*c*)	Practical Chemistry or French		Physics		Maths	French Conv	English
	III (*d*)	Scripture	Geometry	Coml Arith		Physics	Maths or Practical Chemistry	
	III (*e*)		French	Physics		Chemistry	French Conv	Essay
	III (*f*)		Pract Physics	Maths		Maths	French	Geometry
FRIDAY.	I	Essay	Coml Arith	Chemistry		Geom Drawing	Drawing	
	II (*a*)	Math	Essay	Geom Drawing		French	Manual Instruction (3—5)	
	II (*b*)	Essay	Coml Arith	French		History	Cookery	
	II (*c*)	Scripture	Coml Arith	French		Physics	Drawing	
	III (*a*)	Essay	Coml Arith	French		Chemistry	English or Practical Chemistry	
	III (*b*)	French or Practical Chemistry				Physics	Practical Physics	
	III (*c*)	Scripture	Coml Arith	Chemistry		Geom Drawing	Drawing	
	III (*d*)		Geometry	Chemistry		Maths	French	English
	III (*e*)		Practical Physics or Geom Drawing			French	Manual Instruction	
	III (*f*)		Chemistry	Arith		Physics	Practical Chemistry or Maths	

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COMMON EXAMINATION ERRORS.

III.—GEOGRAPHY.

By GEO. G. CHISHOLM, M.A., B.Sc.

IN the first of this series of papers (Dec., 1900), Dr. Bryan justly remarks that "it is only by the application of written tests that teachers can ascertain the points which their pupils fail to grasp." This failure is not always due to lack of effort on their parts. Boys and girls do think, and it is often very instructive to teachers to see the unexpected ways in which their minds work. Teachers thus learn to guard their pupils against misconceptions which otherwise they might never have thought of.

Among misconceptions in geography I am disposed to give the foremost place, on the ground both of frequency and variety, to those connected with the influence of mountains in promoting rainfall.

Mountains do not attract rain; they do not attract clouds. In certain circumstances they certainly have an important effect in increasing the rainfall, and in bringing about the formation of clouds; but the effect is of quite a different nature. To ascribe it to attraction has the inevitable consequence of leading to other errors, and of preventing the entrance into the mind of the true idea, which throws light upon all the facts under this head which it is important for those who learn geography to note and remember.

Yet there is no commoner mode of stating the relation of mountains to rainfall. It could be illustrated in various modes of expression from every examination containing a question in which this subject was involved. "The moisture is drawn out of the winds by the mountains." "Rain falls in Wales the greatest part of the year, because the mountains always draw the clouds across to them." "Cumberland has several mountains which act as magnets." "The mountains are high, but not too lofty to act as a magnet upon the clouds." "The mountains of the west of England and Ireland encourage the south-westerly winds across the open Atlantic." "The mountains attract the warm clouds, which, when they touch the cold summits, burst directly, and let the rain down." "Mountains absorb rain from the clouds." And so on.

Now with regard to the influence which we are now considering, there are two facts of great practical importance which boys and girls learning geography should get firm hold of; first, that the effect of mountains in promoting rainfall is observed mainly on one side of the mountains; and, second, that it is often experienced at a great distance from the mountains, in some cases hundreds of miles away, as at the mouth of the Ganges. But if the idea of mountains attracting rain once enters the mind, these facts are thereby apt to be left out. The boy who wrote about the mountains of Wales drawing the clouds across to them evidently thought they could "draw" the clouds from all sides indifferently.

The essential facts which the pupil should grasp by way of explanation are these: (1) that the winds are the carriers of the water-vapour that ultimately falls as rain; (2) that mountains by standing in the way of vapour-bearing winds force them to rise; (3) that the air thus forced upwards at once expands, thereby becomes cooled, and is thus liable to be cooled below the point of saturation; and (4) that the effect of mountains in thus causing winds to rise may be propagated for a long distance backwards.

Some of the points here mentioned are perhaps somewhat difficult for boys and girls. The difficulty with regard to the point of saturation has no special connection with the influence of mountains in promoting rainfall, but belongs to the subject of rainfall generally, and accordingly I pass that over. It is very important, however, that boys and girls should at least get a firm hold of the fact that air (like other gases) cools in expanding, even though it is not necessary in teaching geography to explain how this effect is brought about. It is not very easy to illustrate this effect in a class, but it may serve to impress the fact on the minds of boys and girls to let them know that some freezing machines are based on this principle, and that all those who cycle may observe for themselves the opposite effect, that of heating by compression, by feeling the bottom of their inflators when pumping up their tyres.

The fourth point mentioned above is also one of some difficulty, but it may be cleared up to some extent by reference to the behaviour of water. In a shallow stream anyone can see how the running water leaps over stones, and that this effect is at least propagated an inch or two backwards; the water stopped by the stone itself stopping that immediately behind it and causing it also to rise. Those who have seen a river weir will understand that it has the effect of raising the level of the water for a long distance backwards. They may be told that the dam now building on the Nile is to hold up the water of that river for 140 miles back. It should not then be difficult for them to seize the fact that the effect of a like nature on a current of air will be still more marked.

But whatever difficulties some of the above-mentioned points may present, it is worth a little effort to instil them into the minds of the pupils. For, once they are firmly lodged in their minds, they will guard them against such errors as have been already indicated, as well as others which other examples will serve to illustrate.

Thus a common idea is that the moisture is, as it were, squeezed out of the air by the mountains, as water is squeezed out of a sponge. It must be admitted that this is rather a tempting illustration. It is one at least quite consistent with, and generally accompanied by correct ideas as to the importance of observing the direction of the prevailing vapour-laden winds. The analogy is likewise so far correct that the moving air forming the wind must in the first instance be more or less com-

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pressed by the obstruction of the mountains. But beyond that the analogy breaks down. Here are some of the consequences of being carried away by it. "When moisture-laden winds come over the Atlantic and meet elevated ground they are forced up into a colder stratum of air, and moisture is pressed out." "When the warm moist winds from the Atlantic strike against the western mountains they contract, and the rain falls." To this head may probably be referred also the following example:—"Clouds are always in motion. When they come in contact with mountains they burst and let their substance fall to the ground." A frequent form of this misconception is illustrated by the next two examples. "Air driven up into the colder regions becomes condensed and unable to hold its moisture any longer." "Mountains condense the atmosphere and turn it into rain." The idea is elaborately expounded in the following curious example of confused thinking coupled with confused expression:—"This condensation of the air is due to the fact that when air is heated it expands and is able to carry a great deal of moisture with it; when, however, the air strikes upon any cold surface it becomes cooled, and hence the cooling of the air contracts it, the air becomes unable to retain its moisture, which consequently gradually falls towards the earth's surface, and as the particles of moisture fall they join together."

Another common misconception is that it is the weight of the moisture that is the direct cause of rain. "Clouds are driven up into the air by mountains facing them, and the moisture becomes so heavy that the clouds can't retain it." "Clouds, on account of their being so heavily laden with moisture, cannot rise above the mountains, and are thus compelled to discharge their burden." "So when the clouds meet the mountains and become chilled, they have to drop some of their water so as to be able to expand and rise over the hills." "The prevailing wind in England and the only one that brings much rain is the south-west. The clouds deposit the moisture brought by this wind over the cold sides of the mountains, and getting lighter they ascend, roll over the mountains, and sail away to the north-east." The first of these statements might be accepted, if only a necessary step in the process by which the specific gravity is increased were not omitted. Boys and girls don't readily grasp the idea that water-vapour is lighter than dry air.

Sundry other misconceptions with regard to this subject might be illustrated by numerous examples, but those already adduced have taken up so much space as to leave little room to comment on errors of other kinds. But there is one error that cannot be passed over, because it is so frequent, and I am afraid I may add, so peculiarly exasperating to examiners. It is to describe a river as flowing up hill, or in a variety of ways to intimate that. In an examination in which candidates were asked to describe the course of the Rhine, I have known two-thirds of them to describe it as flowing (with more or less detail) from the North Sea to the Alps, "giving off" or "throwing off" different tributaries by the way. "The Rhine enters the Lake of Constance after passing the Falls of Schaffhausen." "Geneva is situated on the lake of the same name where the Rhone enters it." In most cases this error is no doubt to be looked upon as nothing else than a grotesque awkwardness of expression; but the following example, taken from a paper otherwise good, would seem to show that the expression may affect one's ideas of the facts:—"The chief drawback to the Mississippi is that the land at its mouth is below the level of that at the source, the river thus flowing against gravity. Centrifugal force is the cause of this." The flowing up hill is not only expressly accepted, but explained!

A variety of this error is to speak of one of the arms of a deltaic river as a tributary of the river. The Húglí, or rather Hooghly, is, of course, always a "tributary" of the Ganges. The word "distributary" has not yet, so far as I am aware, found its way into text-books, but it might be found useful even in schools to guard against this mistake.

Another variety of the same error is to put "head" for "foot" or "mouth," "above" for "below" (with reference to places standing upon rivers), and *vice versâ*. "Chicago is at the foot of Lake Michigan," "Cuxhaven is at the head of the estuary of the Elbe," &c., &c. The putting "above" for "below" is particularly common in the case of places standing on rivers that flow from south to north or have a more or less northerly course. "Cologne stands on the Rhine above Mainz." "Assuan stands on the Nile below Cairo." "Montreal stands on the St. Lawrence below Quebec."

The last-quoted errors are no doubt due to the misreading of maps, as are also such as these:—"Morocco is situated in the upper left-hand corner of Africa." "The ends of the equator are east and west."

One general hint may be of use to candidates in more subjects than geography. It is that they should be a little more chary of universal propositions. They will find it a good rule, when they write sentences containing such words as "all," "always," "no," "never," to think whether it would not be safer to substitute "most," "mostly," "few," "seldom." At any rate, they should take care not to state that "all the trade of Germany passes through Hamburg," unless they are quite sure that none is carried on between, say, Magdeburg and Berlin, and that not a ship carries a cargo to or from Stettin or Danzig; they should not say that the clouds carried to England by south-west winds drop all their moisture on the west side of the Pennine Chain, unless they are quite sure that not a drop falls at Leeds or Sheffield.

To wind up with a few details, I would ask candidates in geography all to bear in mind that Newfoundland does not belong to the Dominion of Canada, that Marseilles does not lie at the mouth of the Rhone or in the basin of the Rhone, that Adelaide does not stand in the Gulf of St. Vincent, nor Winnipeg on Lake Winnipeg, nor Vancouver

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on Vancouver Island. It is not merely candidates in geographical examinations that have to be warned against the frequent confusion of east and west. It may be worth while to mention finally that the equanimity of examiners might perhaps be less disturbed if a larger proportion of candidates could contrive to spell the noun *peninsula* without a final *r*.

MILTON'S "PARADISE LOST," BOOKS I. & II.[1]

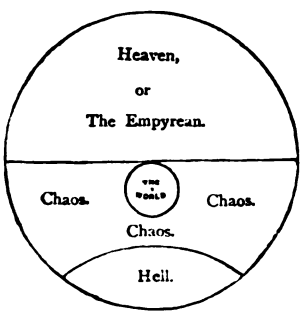
By J. A. NICKLIN, B.A.
Late Scholar of St. John's College, Cambridge.

GENERAL SCHEME.

"PARADISE LOST" is an epic of larger scope than any other of the known types. It is an epic, not merely of the whole human species, not merely of our entire planet, not merely of the entire astronomical universe, but an epic of "Time and Eternity"—the historical connection between our created world and the immeasurable Universe of Pre-human Existence. The connecting link between Time and Eternity, between the events which took place before the Creation, and the fortunes of the first individuals of the human race, is the personality of Satan. The critics are justified, then, who claim that Satan, and not Adam, is Milton's hero. The story of "Paradise Lost" is the story of his revenge, for the loss of his primacy among the celestials, worked upon the new Creation.

The first two books of the poem tell of the fall of the rebellious angels, expelled from Heaven because they had revolted against the pre-eminence of the Son; their council in Hell; and Satan's mission of exploration to discover the new World which—so a late rumour in Heaven had asserted—was but now called into existence from chaos.

I give one of Professor Masson's diagrams to



elucidate Milton's conception of the Universe, in its largest acceptation. That is, not the astronomical universe as we know it, but the whole sphere of existence, celestial, human, and infernal, with chaos interposed.

We must suppose this sphere as literally an infinite sphere, divided by its diameter into Heaven and Chaos. The upper hemisphere of primeval infinity—HEAVEN, or THE EMPYREAN—is a boundless, unimaginable region of light, freedom, happiness, and glory, in the midst of which God, though omni-present, has his immediate and visible dwelling. The other hemisphere, CHAOS, is a huge, limitless ocean or abyss of universal darkness and lifelessness, where the "embryon atoms" of hot, cold, moist and dry wage a perpetual battle. But when the angels were expelled, they were cast into a kind of antarctic region, at the furthest pole from Heaven, which had been prepared for them. This is HELL—a vast region of fire, sulphurous lake, plain and mountain. But God, after the expulsion of the rebels, had created a fourth mansion in universal space—THE WORLD: that is, not merely the planet on which we live, but the whole astronomical universe, as we know it. This hung pendent by a golden chain from Heaven,

> "in bigness as a star
> Of smallest magnitude close by the moon."

The distance of the World from the border of Hell is exactly equal to its own radius; so the distance from Heaven-gate to Hell-gate is exactly equal to three semi-diameters of the World.

There is a difficulty in the time which is supposed to have elapsed between the expulsion of the rebels and the arrival of Satan on the Earth. Nine days the angels fell through confounded Chaos; nine days they lay stupefied on the deep. During this second space of nine days came the six days of Creation. But how long did Satan consume in rising through Chaos, and finding his way to the Sun, and thence to Mt. Niphates? As Adam speaks of the seasons and their change, as he recalls, with clear recollection, but from a distance, that day on which he woke from sleep to the discovery of his companion, it would appear that Satan's upward voyage must have been many times longer than his fall, though it was his "proper motion" to ascend; "descent and fall" only was "adverse." It must be supposed, then, that an indefinite period was involved, when he dropped "plumb-down ten thousand fathoms deep," and would still have been falling but for the ill chance of

> "the strong rebuff of some tumultuous cloud."

But, though Milton has set himself to give, so far as possible, a strictly coherent account of the Universe, Creation, and the events which preceded the appearance of man on the earth, so that it may be possible and even plausible for the reader to take it all literally, it must at the same time be borne in mind that Milton does not restrict himself to the necessity of a literal interpretation. Thus, though he speaks of the "opal towers and battlements" of Heaven, he is careful to remind us that its "circuit" is "undetermined round or square." All his description, if it would not have been tedious to be always qualifying, might be marked as a *phenomenal* representation of otherwise inexpressible reality, in the same way as his representation of Death is distinguished:

[1] One of the Set Subjects for the English Literature paper (Second Year) of the Certificate Examination in 1901 of the Board of Education.

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"What *seemed* his head
The *likeness* of a kingly crown had on."

The "bridge of wondrous length," connecting Hell with the Earth, that Sin and Death paved—"a broad and beaten way"—over the dark abyss, is evidently allegorical, and Milton reserves to himself the prerogative, whenever he may desire, of insisting on an allegorical interpretation. Spenser's "Faërie Queen" is definitely recognised as an allegory of spiritual experiences, though there is no little admixture of historical acts and personages. Similarly, "Paradise Lost," though the concrete side and the literal meaning is oftenest obtruded on our notice, bears in itself at least the potentiality of an allegory in which spiritual, intangible truths are suggested by tangible symbols.

THE CHARACTERS.

Thus, the characters, which there is no reason to believe Milton had ceased to regard as persons—the care with which he identifies the fallen angels with the pagan deities is perhaps the strongest proof that he had not—nevertheless aptly embody certain abstract, ethical qualities.

SATAN is the incarnation of the will to rule, the lust of power under all circumstances at every hazard.

"Better to rule in Hell than serve in Heaven."

As the strongest and most far-reaching of desires, and, at the same, shared by the fewest individuals, this principle is represented as dominating and setting in motion all other principles. It is not without certain excellences—dauntless courage—that goes without saying—loyalty to comrades, and thoughtfulness for them. Milton gives his reason for allowing such a qualification:—

"lest bad men should boast
Their specious deeds on earth, which glory excites,
Or close ambition varnished o'er with zeal."

When SATAN takes upon himself the peril which all others tremble to encounter, it is "glory" and "close ambition" which excite. The thought of maintaining and extending his supremacy mingled with every idea. "This enterprise none shall partake with me," he exclaimed, and "prevented all reply," lest others might offer, "certain to be refused," and might be held his rivals in opinion, for having made the offer. As sheer ambition must inevitably bring deterioration on the man who is actuated by it, Satan—the personification of unmixed ambition—suffers a rapid deterioration in his character.

To construct SATAN, as it were the ideal ambitious man, it would seem as if Milton had used the principles of Machiavelli's "Prince."

The nearest in counsel to Satan is Beelzebub, who represents the desire of evil for evil's sake, but in action and outward show his chief supporter is MOLOCH. The spirit of War is the chief instrument of the spirit of Ambition, as malice is its first prompter. MOLOCH desired to be accounted stronger than the Almighty; how then could he bear the supremacy of Satan? Because his ambition was a low one, restricted to pre-excellence in mere force. This Satan could politicly waive, content so long as he could use the brute strength of the other for his purposes. But all attributes and power of every kind being inherent in the Almighty, such an ambition as MOLOCH'S was bound to end in conflict. Milton identifies the spirit of War with the Ammonite deity. He would doubtless have recognised the same being or passion veiled under the names of the Greek Ares and the Roman Mars.

BELIAL and MAMMON represent, the one the desire to subordinate every interest to ease and sensuous pleasure, the other, Avarice. BELIAL is "graceful and humane," that is, polished in manner; he "could make the worse appear the better reason"; "his thoughts were low," but "he pleased the ear." "No temple stood" to him, but he has ever been present in temples and at altars, "when the priest turns atheist," and

"In courts and palaces he also reigns,
And in luxurious cities."

BELIAL'S arguments are those of the man of the world. They seem reasonable, because they urge a present ignoble advantage in preference to a distant, problematical ideal. It is a spirit which shows itself in many lights, over a vast range. Now it is gross and lewd, but at another time it has all the specious attractions of grace, culture and urbanity. Milton's austerity would have heard the suggestions of Belial in such reasonings as those of Omar Khayyam. Steeped as he was in Italian culture, Milton probably had in his thought, when he spoke of the "priest turned atheist," the Italian Renaissance and the fascinating paganism of Leo X.

The character of MAMMON needs no comment. Still, it may be remarked that Milton, in showering on the regions of Hell illimitable opulence of barbaric gold and jewels, is reminding us that the grander the scale on which Avarice works—though its magnificence condones it to the ordinary mind—really only brings it nearer to the passions of the Pit.

BEELZEBUB is the evil counsellor—an Ahithophel on the grandest scale—

"A pillar of state. Deep on his front engraven
Deliberation sat, and public care;
And princely counsel in his face yet shone,
Majestic, though in ruin."

He is more than that. He is in the absolute form the principle of ἐπιχαιρεκακία—a vice which Aristotle has analysed and described, but for which we have no satisfactory English term:—the exultation at others' misfortune, and the desire to contribute to it. Some such feeling as this must often be the prompter of sheer ambition, undirected by any noble motives. Though only the greatest power of evil—unlicensed ambition—could conceive the scheme of overthrowing in utter destruction the whole human race, it was Malice which first uttered and communicated it.

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MILTON'S GREATNESS.

What is it which makes the "Paradise Lost" so great a poem?

(1) The vast sweep of Milton's imagination, and the comprehensiveness of his view. Milton's imagination has visualised infinite cosmic phenomena which are generally grasped only as abstractions. At the same time, his sympathetic and marvellously extensive scholarship, aided by a historic sense very rare in his generation, has combined legends, traditions, and history of widely-separated nationalities and very different orders, into a complete and (on the whole) harmonious system. Thus, a past so remote that, in the first instance, it seems absolutely dead to us, by happy analogies and a kind of prophetic flashes, discovering in it the germs of all future life, is given a magnetic power which with no other treatment would have been apparent.

(2) The haunting suggestiveness of the presentation, by which the effect produced is nowise limited to that which is actually visualised. As instances of this, we may notice the description of the building of Pandemonium—since often imitated—which

> "rose like an exhalation."

And compare the description of Satan's banner, that

> "shone like a meteor *streaming to the wind*,"

with the more detailed simile, where we are told

> "Satan stood
> Unterrified, and like a comet burned,
> That fires the length of Ophiuchus huge
> *In the Arctic sky*, and from his *horrid hair*
> *Shakes pestilence and war*."

(3) Connected with the power of regarding, and making us regard, the legends and traditions of all the human race as an organic whole, is the gift of selecting reminiscences which affect the cultivated reader with a mysterious pleasure.

We may notice such passages as :—

> "And what resounds
> In fable or romance of Uther's son,
> Begirt with British and Armoric Knights:
> And all who since, baptised or infidel,
> Jousted in Aspramont, or Montalban,
> Damasco, or Marocco, or Trebisond,
> Or whom Biserta sent from Afric shore
> When Charlemain with all his peerage fell
> By Fontarabbia."

It is for psychology to tell us why this, which some people have characterised as "a collection of names," should be instinct with charm, as also why a certain arrangement of certain words should have quite another effect on us than a different arrangement of (apparently) synonymous words.

(4) This brings us to the last constituent of Milton's distinctive power:—The authority of his utterance, and the architectural skill in the building up of his narrative.

STYLE.

(1) As we are only dealing with a fraction of "Paradise Lost," I cannot stay to speak here of Milton's pre-eminence in the *composition* of his theme. I have already touched on the same quality displayed in the illustration of his theme by all the achievements, dreams, and interests of men. I have already tried to explain that the highest quality and greatest attraction of "Paradise Lost" is its comprehensive view of human life, where a lesser mind—a mind without the *architectonic* genius—would have lost our sympathy by confining himself within the limits of Semitic conceptions.

(2) In a narrower sense Milton's mastery of style consists in

(*a*) full, varied, and magnificent vocabulary,
(*b*) stately and effective phrasing.

His vocabulary was fed by an opulent scholarship; he pressed into it many words of uncommon coinage from Latin, Norman-French, and, in a lesser degree, Greek, often using these borrowings in their original, not their popular, meaning, *e.g.*, *oblivious* pool, *pernicious* height, *intend* (II. 456), suspense (*adj.*), apathy, *horrid* hair—sometimes old English words that had fallen out of common use, *e.g.*, buxom, uncouth. Milton also introduced a much freer syntax, based on classical models, than his contemporaries employed. In his phrasing he was guided by an infallible ear, and an imaginative sense of words. The poet's imaginations come to him clothed in appropriate words, as the musician's arrive in their inevitable harmonies. It must be remembered, too, that his style is a perpetual mosaic of fragments from the Bible, and Greek, Latin, English and Italian classics.

(3) With the perfect phrasing of a poet must always be associated a perfect rhythm. He has himself described his especial excellence in this :—"*the sense variously drawn out from one verse into another*." The most beautiful blank verse after Milton's is Tennyson's. Tennyson's gives the effect of rhyme, though rhymeless, while Milton's does not. This result is produced by the much more frequent recurrence of what we may call "the close." Milton's unit of verse-composition is the paragraph, or period; Tennyson's the short stanza. Milton's blank verse—if I may be allowed so hackneyed a comparison—is like the organ; Tennyson's like the violin. Tennyson's verse sings; Milton's chants or declaims.

In Milton's verse special note should be made of (1) the great variety of forms into which the normal five-stressed line is resolved; (2) the great variety of cæsura; (3) the composition of the verse-paragraph or period.

A TABLE OF MILTON'S SIMILES IN BOOKS I. & II.

I. 200 etc. Satan is compared to (1) Titan, (2) Sea-monster.
231 The ground of hell to side of a hill, thrown up by volcano.
286 Satan's shield compared to moon seen through telescope [notice allusion to Galileo].
292 His spear to mast of flag-ship.
302 Fallen angels as thick on the sea of fire as leaves in Vallombrosa.
305 or sedge on Red sea (sea of bulrushes):
[Notice effective use of names—Busiris and his Memphian chivalry.]
338 Fallen angels compared to locusts called up by Moses.
351 and to Northern hordes.

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538 Satan's ensign to a meteor.
575 Men's armies look by fallen angels as pigmies by men.
594 The Archangel ruined compared to the sun on a misty day, or in eclipse.
612 Devils to trees left after a forest fire.
676 Devils to sappers and miners.
745 Vulcan dropping from heaven to a falling star.
763 Hall of Pandemonium to knightly lists.
768 Devils to bees clustering about hives,
782 and to elves.
II. 285 Applause of Pandemonium to winds in sea caves.
477 Sounds of devils rising like remote thunder.
488 Satan's address to his peers like sun driving away clouds.
533 Sports of devils compared with apparitions of war in the heavens.
542 Devils rending rocks with whirlwinds to the tortured Hercules tearing up rocks by the roots.
593 The frozen continent beyond Lethe to the Serbonian bog.
636 Satan soaring in the sky to a fleet "hanging in the clouds."
660 Sin's hell-hounds to Scylla's dogs and those which follow Lapland witches.
708 Satan enraged like a comet [cp. with I. 538, and see above].
714 Satan and Death, threatening, like two black clouds on the Caspian.
888 Gates of Hell compared to a furnace mouth.
903 The atoms to African sands.
921 The noise of warring elements in Chaos to (1) battering rams, (2) the fall of heaven.
943 Satan pursuing his way, now flying, now running, through Chaos, to Gryphon, pursuing Arimaspian.
1013 Satan, upward springing, to a pyramid of fire.
1017 His danger between clashing elements to (1) Argo between the Symplegades, (2) Ulysses between Scylla and Charybdis.
1043 Satan, approaching the Universe, to a weather-beaten vessel nearing harbour.
1053 The Universe, hanging by Heaven, to a small star, hanging by the Moon.

I may remark, in conclusion, what perhaps I should have commented on before, that Professor Masson thinks Milton's blindness led him to dwell most on, and best present, "all luminous effects, all contrasts of light and darkness." But more vivid even than his pictures of "Jehovah's gorgeous armouries," and the "deep-domed empyrean," are his pictures of "bloom profuse and cedar arches," "refulgent sunset," and "crimson-hued, stately palm woods."

No one who has the opportunity should fail to consult Professor Masson's Magistral edition. Mr. Michael Macmillan has published a handy little volume of Books I. and II., capably edited. Mr. Stopford Brooke's "Milton" Primer is, of course, admirable. Professor Raleigh's recent monograph is often suggestive.

English in Preparatory Schools.—The general impression left on my mind by a long public-school experience and the examination of the returns is that English is neglected in favour of those subjects which are showy and easily tested. And yet it seems the most ridiculous platitude to assert that, until a boy can read the mother tongue easily, can understand and assimilate what he reads, and even express his thoughts with reasonable fluency, he is not fit to start on the difficulties of Latin prose, or, indeed, the preparation of anything but the merest rote work. I imagine that many teachers, like myself, must have come across boys reading Virgil and Cæsar, to whose minds the English translation conveyed scarcely any definite idea.—H. C. Tillard, in vol. vi., "Special Reports on Educational Subjects."

PREVENTION OF INFECTIOUS DISEASE IN SCHOOLS.

By C. E. Baddeley, M.D. (Lond).

II.

Modes of Transference.

It will be readily understood that the organisms previously described are transferred from the sick to the healthy in a number of different ways.

The itch mite and the spores of the ringworm fungus are usually transferred by personal contact, or by a mechanical vehicle, such as hair brushes, towels, caps, or such like. The minute infective bacteria may be transferred in many other ways, by the atmosphere, with moisture, or dust, especially in crowded and ill-ventilated rooms, by water and other fluids, and in food. The lower animals suffer from bacterial diseases, and when so suffering are capable of disseminating the infective organisms. Insects may transport them, their feet or probosces being contaminated from some infected excretion, or in certain cases they may introduce the infective organisms with their bite.

The channels by which these infective organisms obtain access to the bodies of their victims are also various. In the cases of itch and ringworm simple implantation on the surface of the skin may be sufficient. Some may obtain access through a cut or abrasion of the skin, as erysipelas, blood-poisoning, and the tetanus bacillus which causes lock-jaw; others require to reach some cavity of the body. Many are carried to the nose and upper part of the air passages by the respired air. This is probably the most common channel of infection, but the mere fact of pathogenic organisms reaching these parts by no means ensures an attack of disease. The mucous membrane covering the parts must at the time be in such a condition as to allow of the implantation and growth of the organisms. The lower cavities of the nose and upper part of the throat usually contain a large number of organisms without ill effect. Under altered conditions some of these organisms become of a distinctly pathogenic nature. These altered conditions are to be found in relaxed, congested, and swollen conditions of the mucous membrane of the parts, and this may be caused by a variety of circumstances, such as inhaling impure air from overcrowding and bad ventilation, from a general chill, or from conditions hereditary to the individual, such as spongy tonsils.

Normally the windpipe and the lungs do not contain any organisms, such as are inhaled being rapidly expelled by the ciliated epithelium covering the part. When from any cause the activity of this is impaired the organisms which cause pneumonia and consumption obtain access and flourish. In the same way the intestine contains multitudes of organisms of various kinds without harm, and numberless legions are swallowed daily with food and drink. The acid secretion of the

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stomach promptly destroys a large proportion of these, and yet there is no doubt that in certain circumstances the organisms which cause typhoid fever and cholera do pass through the stomach unharmed with food or drink, and reaching the intestines, where the secretion is alkaline, multiply and produce their respective diseases. These are the most common channels of infection.

After thus obtaining access, the behaviour of all organisms is not the same. Some obtain direct access to and permeate the whole volume of the blood, and through it every organ of the body. This is seen in cases of general blood-poisoning or septicæmia, and especially in the disease known as anthrax, a disease fortunately rare in the human race. Other organisms only grow at the point of their introduction and its immediate vicinity. It is, then, the absorption of the toxins produced by their growth which causes the *generalised* symptoms of the specific disease, as is seen in the case of diphtheria. Other organisms, while growing locally, are also gradually taken up by the lymphatic vessels and conveyed to the lymphatic glands. There certain species may continue to grow, and ultimately destroy the gland, and be thrown out as an abscess, or may be carried further, and so permeate the body. Other species the lymphatic gland may be capable of destroying, and recovery will then ensue. Certain other organisms, while growing locally, are also found in organs to which they must have been carried by the blood, notably the spleen and kidneys. This is seen in the case of typhoid fever.

Immunity and Susceptibility.

The normal blood has the power of destroying many pathogenic organisms, and this power seems to be intensified towards the specific organism during an attack of specific disease, and to continue for some time after the disease has subsided. It is to this fact that the recovery of an individual is due, and its subsequent power of resistance to a re-infection with the specific organism. The individual is then said to have acquired immunity. Moreover, during an attack of certain diseases, the blood acquires the power of neutralising the toxins of the specific organisms. It is on this that the treatment of diphtheria by antitoxin is based. Besides this acquired immunity, there is also a natural immunity whereby certain races and families of individuals offer a greater resistance to certain specific infective organisms than their fellows. This natural immunity is seldom complete. Individuals who are possessed of neither natural nor acquired immunity are said to be *susceptible*. This susceptibility varies largely in different communities, and also in individuals at different times. An individual in good physical health is, as a rule, less susceptible than one debilitated by insanitary surroundings, exhausting disease, or similar causes. This factor has a large bearing in the severity of an outbreak of infectious disease. The virulence of the specific infective organism is also to be taken into account; but, as a rule, specific infective organisms acquire virulence by passing through susceptible individuals. That is to say that a specific infective organism of low virulence infecting a susceptible individual and causing a mild outbreak of specific disease will acquire virulence, so that a second susceptible individual infected from the first will very often suffer from a severe attack of the disease. Immunity is not acquired in respect of all infective organisms; this is notably the case in consumption, in which the infective organism seldom dies out, and even when it does so a re-infection is liable to occur.

The Hygiene of the Schoolroom.

The schoolmaster's first line of defence against these organisms of infectious disease is the maintenance of the highest possible degree of physical health among the occupants of his school. Experience has abundantly proved that children in health offer a greater resistance to attacks of infectious disease than when weak and debilitated by insanitary surroundings, and it is to the attainment of this condition that most hygienic measures are directed. The subject of school hygiene has been ably treated in these pages some months ago by Dr. Shelly, and I now only touch on it where it has a direct reference to the spread of infection. Against small pox, artificial immunity can be conferred by vaccination, and in this country the majority of children are so protected, and at some future time it may be possible to confer a similar *artificial immunity* against other infectious diseases, but at present this is limited to a temporary protection against diphtheria by the use of antitoxin. In every school also a certain number of individuals will have acquired *immunity* against various diseases by a *previous attack*, but a certain proportion of susceptible individuals will always be present, and the greatest power of resisting infection we can confer upon them is the maintaining of a high degree of physical health. It cannot be too strongly urged that the schoolroom is not the place for a child who is suffering from debilitating disease, even though it is not of a communicable nature. Such a child will derive small benefit from educational work, and will do but little credit to its schoolmaster, and will, moreover, when infectious disease is imported, often be the first victim. The sanatorium is the place for such, not the schoolroom. In practice the exclusion of all such children is not possible, but it is well to bear their susceptibility in mind.

The responsibility of the schoolmaster for the physical health of his scholars varies with the nature of his school, but even in the ordinary day schools reasonable precautions against infectious disease are expected. The schoolroom should be of a size proportionate to the number of persons expected to occupy it, of a regular shape and sufficient height; it should be well lighted by windows reaching to the ceiling or roof. The walls should be plain, without cornices or ornamentation where dust can lodge, and covered with

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smooth plaster. The floor should be of hard wood and "caulked" like the deck of a ship, or covered with some impervious material, so that it may be sluiced with water or disinfecting fluid and rapidly dried. The ordinary method of warming by one or more open fireplaces is, on the whole, perhaps the best; closed stoves, hot-air and hot-water coils are often disagreeable and difficult to manage. But whatever system be adopted, it must be remembered that the object to be attained is to keep the whole body of the air in the room at as regular a temperature as possible.

VENTILATION.

The question of ventilation is closely connected with that of warming, since in all ordinary systems the difference in density of air at different temperatures is relied upon to provide the motive force. Efficient ventilation is of the highest importance not only for maintaining the general good health and comfort of the occupants of the schoolroom, but also as a direct means of preventing the spread of infection when imported. The object to be aimed at is a complete and uniform exchange of the air in the room with that outside, and as this must be effected without creating *draughts* or unduly lowering the temperature of the air in the room, it will be readily understood that this is a problem not easily solved. Many systems of ventilation have been devised of a more or less complicated nature, but speaking generally, the more simple the apparatus, if adapted to the requirements of the room, the better are likely to be the results.

Respired air leaves the lungs at a temperature but little below that of the normal body temperature, viz., 98·2° F., and so is, as a rule, warmer than the general mass of the air in the room, and its density is in consequence less; it therefore ascends towards the top of the room, and if there are proper outlets there, it will escape and be replaced by colder air from outside. Moreover, the air in the room will, as a general rule, be maintained at a higher temperature than that outside by the heating apparatus, and this will further facilitate the exchange. For the admission of air from the outside proper inlets must be provided, otherwise the incoming air will not be properly diffused, and draughts will be created. Therefore the essential features of a system of *natural ventilation* are a properly regulated system of *air outlets* near the top of the room and a similar system of *air inlets* around the lower part. It is found in practice that the most suitable temperature for the air in the schoolroom is from 60° to 65° F., but in summer the temperature of the outside air sometimes rises as high or higher than this, and the circulation of the air in the room will then become very sluggish, and some additional means must be sought to promote it. This may be done by opening the windows and making use of the ordinary atmospheric movement to remove the air of the room by *perflation* or by connecting the air outlets with an *upcast shaft* in which an upward current of air can be maintained by a gas jet or a small furnace. This latter is sometimes called the method of *ventilation by extraction*. On the other hand, when the temperature of the outside air is low, the velocity of the current through the air inlets may be so great as to cause draughts, and lower the temperature of the air in the room.

Other practical difficulties have also to be provided for. Where the room is warmed by open fireplaces there will be a strong upcast current of air from the fire through the chimney, and if not provided against, the cool air from the inlets may simply sweep along the lower part of the room to the fireplaces and escape by the chimneys without replacing the respired air in the upper parts of the room. This difficulty is sometimes overcome by placing separate air inlets below and behind the fireplaces. Again, in certain conditions of the outside atmosphere, such as wind or moisture and density, the pressure upon the air outlets may be such as to check the outward current of air or even reverse it, entirely disarranging the system of circulation. To obviate this many elaborate contrivances have been devised, but the simpler such *extraction cowls* are the better they are likely to act and the less liable to get disarranged.

The ventilation of the schoolroom should always be *independent* and *self-contained*; that is to say, the supply of incoming air should not be derived through doors from passages or other rooms, but through proper openings constructed for the purpose. The outside openings of such inlets should be placed some little distance from the ground in situations where the air is not liable to be contaminated by sewer gas or other impurities. They should be protected in some way against the entrance of dust and the direct pressure of the wind, and some means of temporarily closing them may be desirable. The internal openings of the inlets should be placed at intervals around the room at a height of four or five feet from the floor, and the incoming current of air should be broken by a gauze screen or other device. The air passages may pass directly through the walls, or it may be necessary to conduct the air some distance in an air tunnel. This should be easily accessible for cleaning purposes. To ensure that the incoming air shall be properly *diffused* the total area of the air inlets should be sufficiently large.

Ventilation by perflation is only permissible when the temperature of the outside air is such as to allow of a comfortable existence in the open air. This can only be said to be the case when the shade temperature rises above 65° F. In such circumstances, where there are plenty of windows to open, this method is sometimes comfortable and efficient, as the air in the room becomes practically continuous with that outside. In practice windows are largely made use of as a means of ventilation both as air inlets and as air outlets; but a schoolroom should not depend upon its windows for its ventilation, as it is almost impossible to regulate the currents of air satisfactorily by such means. The air outlets should be placed around the upper parts of the room, whence they

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may pass through the walls to the outer air, or in the ceiling, whence the ascending currents may be conveyed to the roof by one or more upcast shafts.

Where artificial lights are used they may advantageously be placed below the air outlets, so as to ensure a sufficient velocity in the ascending current of air to overcome the outside pressure and to carry off the products of combustion. To ensure this velocity also, the total area of the outlets should be somewhat smaller than that of the air inlets, but these areas must be proportionate to each other and to the size of the room. The total amount of air passing through the room will depend upon these factors. Another air outlet which is often made use of is an opening at the upper part of the room into the chimney, but this often spoils the draught of the chimney and allows the smoke of the fire to escape into the room.

The frequency with which the air in the room will require to be changed to ensure efficient ventilation will depend upon the number of its occupants, the length of time it is occupied, the number of fires and lights and other circumstances, and widely differing figures have been set down by different authorities, but speaking generally, while maintaining the temperature of the room not below 60° F., and avoiding draughts, the more frequently the air in the room is changed the less will be the chance of the air which has been respired by one individual, and which may contain infective organisms, being respired by another and so communicating infection.

A good practical test of the efficiency of the ventilation of a room is that on entering it from the outer air after it has been occupied an hour or more, no sense of *closeness* or *stuffiness* should be perceptible. One or more thermometers should be placed in the room remote from the fireplaces to indicate the temperature.

Ingress to and egress from the schoolroom should be by doors opening outwards into a lobby or lobbies. These should always have good cross ventilation independent of that of the schoolroom, and may be fitted with hat and coat rails, and lockers, so that hats, overcoats and books which are not immediately required may be left there, and not brought into the schoolroom. The latter also should only be occupied during school hours, and not used for dinners and other such purposes.

The Object of Ventilation.—The object of ventilation is to prevent the accumulation of organic impurities and any deficiency of oxygen, such as may arise from burning gas in a room for purposes of illumination. Since the organic matter does not admit of direct estimation, the percentage of carbonic acid in the air is usually taken as an indirect measure of its amount, and this is at the same time a measure of the deficiency of oxygen. Air which has been fouled by breathing is injurious if it contains more than ·05 per cent. of carbonic acid. Knowing the amount of air passed through the lungs in one hour and the amount of carbonic acid it contains, calculation easily shows that if the percentage of carbonic acid is to be kept down to the limit of ·05 per cent., a man should live in a room whose capacity is not less than 28,000 litres (1,000 cubic feet), and into which at least 60,000 litres (2,000 cubic feet) of fresh air are admitted each hour.—Huxley's "Elementary Physiology," p. 168.

A COURSE OF ELEMENTARY AND EXPERIMENTAL PLANT-PHYSIOLOGY.

(*Communicated by Prof. L. C. Miall, F.R.S.*)

THE course was arranged in the first instance for junior agricultural students, with little or no scientific knowledge. The time available was five hours a week, divided into sections of two hours, one hour, and two hours, on three consecutive days. The course extended over twenty weeks (October-March), but included other natural history subjects, being intended as an introduction to a general course of agricultural study. The want of summer sunlight was found to be a serious difficulty. Microscopes and the usual appliances of a biological laboratory were at command.

A similar course would be useful in the higher forms of a secondary school, in a rural technical school, in some higher-grade schools, and in other places where the conditions are similar to those described above.

We have endeavoured, as far as possible, to give to the course the form of an inquiry. To rouse curiosity, to satisfy curiosity by the results of personal observation and experiment, never, if we can help it, to give the information beforehand, to make the answer to one question suggest a second question—these are the methods of teaching by inquiry, and it will be seen how widely they differ from the lecturing system, which, by whatever name it may be called, is almost universal in the science courses of to-day.

We are aware that we have not always, nor with due thoroughness, carried out the intention of making every lesson and every part of a lesson an inquiry. But the intention has never been out of our minds, and with greater knowledge, experience, and ingenuity, we could have realised it more fully. Our successors cannot fail to improve upon this attempt if they will aim at the same end.

It has been a matter of serious consideration how full a syllabus to lay before the teacher. If it is scanty, he complains that he is left to solve many difficulties unaided; if it is full, he loses initiative and liberty. We have thought it best to work out the first section of the course with some fulness as a sample of the method, and to treat the rest more concisely.

The course (of which this is only an instalment) was drawn up by Professor Percy Groom, of Cooper's Hill; Professor M. C. Potter, of Newcastle; Mr. Harold Wager, Inspector of Science and Art Schools; and the following members of the staff of the Yorkshire College, viz., Professor Miall, Dr. W. G. Smith, Mr. T. H. Taylor, and Mr. N. Walker.

I.—CARBON-FIXATION.

(1) Let us begin with an object-lesson on leaves. Fresh-gathered leaves of various kinds, evergreen and deciduous, simple and divided, living and fallen, thin and succulent, leaves of one-seed-leaved and two-seed-leaved plants, will be

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required, and there should be enough to give one of each kind to each student.

Questions: What is there common to the form of nearly all leaves, however they may differ in detail? Any exceptions to the broad and flat form? In what circumstances are thick leaves formed? What does the broad and thin form suggest as to the probable functions of a leaf? That it exposes a larger surface to the light; that it gives out something to the air, or takes in something from the air.

If the time of year is suitable, make naked-eye observations on the scars of fallen leaves.

Some discussion of the use of special kinds of leaves will interest the class. Holly, oak, ash, wheat or any other common grass, heather, crowberry or other rolled leaves, are examples, but the discussion cannot be pushed far while the students possess no special knowledge. A point may be made here and there, but much will be left unexplained for the present. This first lesson is to suggest, not to satisfy. Consider, together with the class, how they can learn for themselves something about the chief functions of leaves and the way in which those functions are discharged. Lead them to feel that they must get some knowledge of leaf-structure before they can attack questions of leaf-function.

(2) Ask for suggestions from the class as to the best ways of studying the structure of a leaf. Failing anything better, the following will prove useful. Examine box-leaves, fresh or alcohol-preserved, which have been boiled in 5% caustic potash for 15 minutes. The epidermis can easily be detached. Mount it in water on a glass-slip, and draw it by the microscope. Remove the lower epidermis in the same way. Draw. Examine the mesophyll and leaf-veins which remain when the upper and lower epidermis have been removed. Draw the veins.

(3) Tear off the lower epidermis from a fresh leaf of elder, or, in winter, from a leaf of *Linaria cymbalaria* (toad-flax), which is common as a greenhouse weed. Mount in water and observe the stomates; their parts, the colour of fhe guard-cells, the distribution of the stomates. Draw.

(4) Suggest that it would be instructive to see the parts of a leaf not in detached layers, but from top to bottom in one view. Difficulty of opacity—how it can be got over? Make the leaf transparent? This will answer with very thin leaves, *e.g.*, of young fern. Make them transparent by the same process as that employed in the case of the box-leaf. But a thick leaf cannot be studied in this way—why? The method of thin sections may be suggested. Show small groups of students how to cut sections. Let each cut and mount in water a section of laurel leaf (preserved in alcohol).

(5) Show the class how to mount in balsam thin sections of laurel leaf previously cut and stained with hæmatoxylin. Draw.

(6) See what has been learned about leaf-structure. Run over the epidermis, how the epidermal cells differ from those of the mesophyll, where stomates are to be found, the palisade cells, the looser cells which lie between the palisade cells and the lower epidermis, the spaces between them (what do these spaces contain?)

(7) Try to find an answer to the question at the end of 6. Take a kettleful of water which has been just boiled, and distribute it in warmed tumblers to the class. A fresh laurel leaf is then dipped in a tumbler of hot water. Air is seen to pass out, from the lower surface only, in small bubbles. Cut a tolerably thick section of a fresh leaf, mount in water with a cover-glass, and examine by the microscope. The confused appearance of the mesophyll, and especially of its lower part, will lead to some perplexity, if the students are unfamiliar with the look of irregular air-bubbles. Run in some alcohol. The air is quickly driven out in the form of spherical bubbles. We show in this way that the irregular, intercellular spaces contained air. How did the air get in? By examination of good sections it can be made out that the stomates lead into the air spaces.

Where do the air spaces lead? Show, by blowing into water, through a buttercup leaf, that they lead a long way into the plant. Blow through the leaf in both directions.

(8) Find open stomates in a bit of fresh epidermis mounted in water (3). Run in some 2·5% solution of common salt. Observe the closing of the stomates. What was the action of the salt solution? The teacher may make this clear by the well-known plasmolysis experiment (Bower's "Practical Botany for Beginners," II., ii., iii.). The salt solution abstracts water from the guard cells, and then the stomate closes. Add water to the epidermis; the guard cells, as they absorb the water, swell, and the stomate opens.

(9) Make a model to show the action of the water in opening a stomate. Take a piece of rubber-tubing, close one end, and secure it to an upright board; bend the tube into a close loop, whose two limbs touch all along; secure the bends of the loop by strips of card fastened to the boards with drawing pins; pass a pin or two between the limbs of the loop, to prevent both bending in the same direction to right or left. Now connect the open end of the tube with an oxygen bottle. On admitting the gas, the two limbs, which were in contact, diverge, and leave an oval opening between. Thus we see how elongate cells, which lie side by side, and whose ends are fixed, separate from one another when distended.

(10) Notice the contents of the mesophyll cells of a fresh leaf-section. See the green corpuscles scattered through them, and remark that the green colour is confined to the corpuscles. See the green corpuscles in a living leaf of a water-moss, or other transparent green plant.

(11) What is the green colouring-matter? We give it a name (chlorophyll), but that does not let us into any important secret. No one can as yet tell us anything that signifies about the *nature* of the chlorophyll, but we can easily learn how to recognise it, and we may come to know that it is a substance of great value to the living plant. One step towards a knowledge of chlorophyll is to learn how to separate it from the plant-tissues. Is it soluble in water? Try the action of water upon leaves, leaf-sections, &c. No result. Try hot water. No result. Try alcohol. The tissues lose their colour, and the alcohol turns green.

(12) To get a good supply of chlorophyll solution, boil some grass leaves, chopped small, and pour alcohol on them. When the alcohol is deeply tinged, filter it into a flask. Notice that the liquid is green by transmitted, reddish by reflected light.

(13) A good way to recognise certain coloured liquids is to get their spectra. Show how to get a spectrum of didymium, &c., by the lantern and a prism. Show in the same way the spectrum of hæmoglobin and chlorophyll. Get the same spectra by means of a spectroscope; the spectrum of chlorophyll is not indispensable to what follows, but the demonstration is interesting and instructive. Let the students put the parts in working order after they have been deranged, learn where to place the lens, how to get the best width of slit, &c.

We have used a number of technical terms, but if they present any difficulty, plain English words can be found. We might call the epidermis the *skin*, the mesophyll the *inner tissue*, the stomates *pores*, chlorophyll *leaf-green*. In lessons to children or uneducated persons the Latin and Greek would be quite out of place, and even grown-up people, who have received much instruction, sometimes become enslaved by their vocabulary, so that it is well sometimes to talk plain English, even to them.

(14) We want to get the class to make acquaintance with the chief properties of starch, which are involved in any investiga-

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tion of the uses of chlorophyll. How shall we bring it in? They will never think of it for themselves. We may bring it in without a word of preface in the form of a practical problem. The teacher does not always keep to one route, nor always pass by easy steps from the known to the unknown. He sometimes deviates for the sake of variety and surprise.

We bring into class some pale, nearly colourless leaves (tropæolum, primrose, sunflower and marigold answer well), preserved in a large bottle of alcohol, put one of the leaves into a dish, and pour sherry-coloured iodine-solution upon it, naming the solution as we do so. In two or three minutes the word "solarised" can be read upon the leaf. Ask how the word came there. The name of *iodine solution* will put some of the class on the track. Iodine turns starch blue, and no doubt there was starch (perhaps painted on the leaf?) where we now see the word *solarised*. Show that the letters do not rub off, and when the right moment comes explain that you cut these letters out of a card (produce the card), and fixed the card upon a living leaf in broad sunshine. Wherever the sunlight fell, starch now appears in the leaf, and that starch can be made visible any number of times by bringing the leaf out of alcohol and putting it in iodine solution.

(15) Show the change of colour when iodine solution is poured upon dry starch, and thin starch paste. One part of starch to 200 times its weight of boiling water is strong enough. Try the same test upon a slice of potato, a piece of bread, a slice of onion-bulb, a slice of crocus-corm, a turnip, an apple, &c.

(16) To show starch under more natural conditions, cut thin sections of a potato tuber, stain by adding a drop of Bismarck brown solution to the section; wash off after one minute with 70% alcohol; add a drop of iodine solution; cover, examine and draw.

(17) Remark the white colour of a mass of starch. Many other vegetable substances are white or whitish (paper, wood, &c.). The white proves nothing at all as to composition. Wood and paper, for instance, are largely made up of black carbon. Char them, and the black colour shows at once. How can we prove that charcoal contains carbon? Heat strongly with air in a sealed test-tube of glass (not too soft), connected with a bent tube, which can be passed into lime-water. Heat the charcoal till it glows, without warming the air in the tube more than can be helped. Then warm the upper part of the tube, and drive the gas into the lime-water (Smithells in "Object Lessons from Nature"). Repeat with starch; the same results will be got.

(18) Where does the starch come from? It is not supplied to the plant ready-made. (How do we know this?) It is made by the plant. Since starch contains much carbon, carbon in some form must be supplied. Does the plant get its carbon from the ground? We shall not be able to say without further inquiry, but if the question were put again a little later, it could be answered. Does the plant get its carbon from the air? Animals, burning wood and coal, &c., send much carbon dioxide into the air; can plants make use of that source of carbon?

Provide six wide-mouthed bottles, washed out with water, to keep the air within moist; into 1 and 2 put living green leaves; into 3 a green leaf killed by boiling; into 4 roots, a piece of fungus, a piece of living wood, and any other living plant tissue which is not green. Leave 5 empty for the moment; it it is to serve as a check. Into 6 put a living leaf. Charge all the bottles with about an equal quantity of CO_2 from the mouth; cork, and seal with vaseline. Place bottles 1, 3 and 4 in a good light,[1] 2 in the dark. After 24 hours test all the bottles except 6 for CO_2 with lime-water.[1] Note the results, and draw conclusions.

(19) Into bottle 6 we have put a living green leaf. Pass a twice-bent tube through the cork and let the outer limb dip into a coloured liquid contained in a small beaker. Cause the liquid to rise a little way in the tube. Charge the air in the bottle with CO_2 as before; seal, and expose to strong light, not sunlight. Mark the level of the liquid in the tube when all the preparations are complete. Test the bottle for CO_2 after 24 hours, and observe before disturbing anything whether the level has altered.[2] What is learned from this experiment?

We are now in a position to show:—

(1) that living green plants absorb CO_2 from the air in sunlight;
(2) that they do not absorb CO_2 in the dark;
(3) that dead plants do not absorb CO_2;
(4) that not-green parts of living plants do not absorb CO_2;
(5) that when CO_2 is absorbed, an equal, or nearly equal volume of some other gas is set free.

(20) What gas can this be? Place a piece of living Elodea (the Anacharis of our ditches) in water, and expose to sunlight. Observe the train of bubbles issuing from the cut end. Collect the gas from a large quantity of Elodea placed beneath an inverted funnel, and exposed to bright sunshine. Determine that it consists largely of oxygen by alkaline pyrogallic acid solution, or other method.[3]

(21) Expose a thin, green leaf which has been kept in the dark for at least 24 hours to sunlight, darkening one part with tin-foil. Tropæolum is good, but many others answer well. Kill with boiling water, decolorise with alcohol, place in iodine solution, and observe that starch has formed wherever the sunlight got access. This experiment can be varied in a number of ways.

(22) Expose a variegated leaf (Pelargonium answers well) in the same way.

(23) Expose a leaf as before, but exclude CO_2 by potash solution.

(24) Expose half of a leaf to air containing CO_2, the other half (which is not to be detached) to air devoid of CO_2. Sunlight as before.

(25) Expose leaf of a land-plant as before to sunlight and CO_2, but keep the leaf covered with water.

(26) Repeat the last experiment with a leaf which is ordinarily submerged, such as a Potamogeton (pond-weed).

(27) Rub the under-side of a leaf cautiously with vaseline, to block up the stomates. Expose as before.

(28) Place the leaf in a saucer kept cold by ice. Expose as before.

(29) Summarise the results of Sections 18-28. You are now able to prove that green leaves can form starch independent of roots.

(30) Our experiments show indirectly that starch formed in a leaf during sunlight disappears in the dark. Try this expressly. What becomes of the starch? Starch is insoluble in water—(proof?) imperfectly soluble in boiling water. Is there any known method of dissolving it without utter destruction? Action of human saliva (instructions in Foster and Langley's "Practical Physiology," Lesson XV.). Try the action of malt

[1] The experiments can be carried out successfully with winter sunlight.

[1] Also test the bottles with lime-water before the experiment is entered upon. If they have been washed out with hard water, the lime-water may turn milky in every case.

[2] Inequalities of temperature rapidly affect the level of the water in the tube. A check experiment (bottle and tube without a leaf), and bell jars to keep off currents of air, will be useful precautions. The temperatures should be noted.

[3] Professor Smithells suggests the following method:—"The oxygen in the tube may be absorbed by thrusting up into it a bundle or brush of fine copper wire, and then introducing, by means of a bent pipette, a quantity of strong ammonia solution. The oxygen is absorbed in about half-an-hour, and a blue solution of the ammoniacal copper compound is formed. There will probably be an unabsorbable residue of nitrogen in the tube."

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extract on starch paste. Prove by Fehling's test or phenylhydrazin that sugar is formed in each case.

(31) Is there any substance in a living green leaf which can change starch into sugar? Take leaves of pea, tropæolum, &c., gathered in evening or night; bruise them, extract with a small quantity of cold water, and test the properties of the extract on thin starch paste, starch grains in the field of the microscope, &c.

(32) Gather leaves of the pea (*Pisum sativum*) at night; dry at 40°-50°C; powder finely. The watery extract may be tried at any time afterwards on starch grains or starch paste; it is even more energetic than the extract from fresh leaves.

(33) If time and the knowledge of the students allow, it may be shown that in the dark sugar accumulates in the neighbourhood of the leaf-veins (Detmer, "Pflanzen-physiologie," par. 115, Engl. trans., par. 115).

(34) Again summarise the results obtained:—

Starch is formed in living leaves of certain plants (1) in sunlight, (2) when chlorophyll is present, (3) when CO_2 is present, (4) when the stomates are open (land-plants), and (5) when the temperature is suitable. If any one of these conditions is not satisfied, the formation of starch may be hindered altogether. Starch may form in a leaf which is separated from the root and stem.

Starch and nearly all parts of a plant contain carbon. The source of the carbon? The source of the oxygen exhaled by the plant in sunlight?

Starch is convertible into a soluble substance, which can be transported to distant parts of the plant. The use of the starch in bread suggests that starch may be useful as food to the plant and its various organs.

Make it plain that the parts played by chlorophyll and sunlight in the formation of starch are still uninvestigated by us; we know nothing more than that their co-operation is essential.

II.—TRANSPIRATION.

(35) Elicit from observations on greenhouses, bell-jars containing plants, &c., that wherever plants are enclosed by glass, moisture is apt to collect on the glass. Where does the moisture come from? Some comes from the damp earth; possibly all. Test this supposition by experiments. Take a flower-pot with a living plant in it, cover the earth and pot with india-rubber sheeting, fitted close to the stem to prevent the escape of water vapour; cover it with a bell-glass, and see whether the glass is bedewed. Put the covered pot (without the bell-jar) on the scale of a balance, counterpoise it, and see whether there is any gain or loss in an hour or a day.

[By more elaborate methods (see Darwin and Acton) the loss of water can be more exactly measured.]

(36) Does the water escape with equal facility from both surfaces of the leaf? This may be tested by laying strips of paper previously dipped in a strong solution of cobalt chloride[1] upon laurel leaves, some of which have the upper and some the lower surface exposed. Show beforehand that the blue paper turns pink when moistened, and that the change of colour is quicker and more decided when the supply of moisture is greater. Press a fresh leaf between two plates of glass, and notice which plate is most bedewed.

(37) What channels exist by which moisture can possibly ascend from the ground or a vessel of water to the leaves? Cut off a leaf of Pelargonium with a razor, and dip the cut end of the leaf stalk into a strong watery solution of eosin. The path of the coloured solution can soon be made out; it becomes very distinct in time. Follow up the inquiry by examining the vessels in boiled rhubarb, &c.

[1] Stahl recommends a 1% solution for delicate investigations, and a 5% solution for demonstration purposes.

Reasons have been now discovered for concluding that green leaves are carbon-fixing and also transpiring organs. Take care not to let it be inferred that they are nothing else. In the course of their future work the students may discover that leaves discharge other functions of equal importance with these.

PSYCHOLOGY AND SCIENCE TEACHING.[1]

By PRINCIPAL LLOYD MORGAN, F.R.S.
University College, Bristol.

IT is said that not long ago a praiseworthy pupil thus briefly indicated the *rôle* of a lecturer on psychology:—"He tells us what everyone knows in language which nobody can understand." If I presently fall under this indictment it will not be from lack of warning. And if, notwithstanding my best efforts to avoid psychological platitudes, I speak of matters which are already familiar to science teachers, how, I venture to ask, could it be otherwise? Psychology being a study of the laws of mental sequence, it is impossible for a teacher faithfully to exercise his calling without reaching conclusions of practical value with regard to the linkage of intellectual ideas. Since it is the establishment of certain modes of sequence in the accumulating experience of the pupil which it is his business, as teacher, to secure, must he not, if honest in purpose, have given this matter some thought? It is indeed conceivable that a scientific investigator should, so to speak, take his mental faculties and the manner of their operation for granted, and rest content with the results which they somehow produce. But even he, as expositor of these results, must consider — one could wish that in many cases he considered to better purpose—how best to set them forth so as to establish a due sequence in the minds of his hearers or readers. He is, in fact, so far a teacher—one who has to weigh not only the facts in themselves, but how they are to be fitly presented; and since they are to be presented to another mind, he must have some knowledge of the way such facts affect such a mind. But for the teacher by profession the effects of the manner and method of presentment are of primary importance. Furthermore, in giving to the world the results of his researches, the man of science may say: "Here are my observations and conclusions clearly and systematically set forth. If from want of training or through lack of mental grasp you cannot assimilate them, that is no concern of mine." The science teacher, however, may not urge such an excuse for failure, since for him observation and conclusions are to be regarded as a means to the end of education.

It is easier to indicate what is not education than to give a satisfactory definition which shall summarise what it is. Paraphrasing a well-known description of metaphysics, we may all agree that when one fellow talks about what he doesn't understand to other fellows who don't understand him, that's—*not* education. We shall all agree, too, that such a proceeding is quite unknown where science teaching is concerned! It may smuggle candidates as contraband goods through the custom house of the examination hall; but it is assuredly neither science nor teaching as we understand these words. I will, however, venture to ask this question. If the science teacher does not understand the workings of the mind which he is endeavouring to train, does he not so far fall short of the ideal we should all set before us? Is he very different from the doctor who prescribes without an adequate knowledge of the

[1] An Address delivered at the Conference of Science Teachers at the South-western Polytechnic, Chelsea, on January 11th, 1901.

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principles of physiology? For psychology stands in the same relation to mental digestion and assimilation as does physiology to analogous bodily processes. Is not the teacher ignorant of psychology somewhat of a quack? And if it be said that this analogy fails in that the doctor has to deal with pathological cases, while the teacher ministers to normal and healthy digestion, may it not be urged in reply that, in the pursuit of our calling, we are not wholly unacquainted with certain forms of flatulence and windy distension induced by a frothy diet of words unsubstantiated by the firm fibre of directly experienced fact? Nay, further, do we not regard it as part of our mission to administer the wholesome correctives of that pathological habit which inevitably results from a too wordy diet? And does not this imply that we have our own notions as to the nature of psychological digestion and have paid some attention to mental dietetics?

My contention, you will observe, is that the science teacher who is honest and earnest in his work must have some practical knowledge of mental processes; and that, if he be true to the scientific spirit, he should endeavour to systematise this knowledge, and should make himself acquainted with what others have done in this direction. He should, in fact, so far study the methods and results of psychology as they bear on his special field of labour.

To this end I am of opinion that teachers, and perhaps above all science teachers, should take a course in psychology as part of the recognised curriculum in training for their life-work. But I am aware that a satisfactory course having this special end in view is not easy to formulate; that much of the psychology of the text-books seems little suited to the purpose; and that there is some danger lest such a course degenerate into wordy disquisitions which lose touch with practical observation.

It is commonly assumed that the data of psychology, mental products and processes, are at the outset present in sufficient abundance in the experience which the pupil has already gained in the course of other studies; and that the teacher of psychology has only to classify and systematise these data, and to render explicit the laws which implicitly underlie them. For all but exceptional pupils, however, it is difficult to secure and sustain interest in dealing with old acquisitions in a new way. The application of a number of unfamiliar technical terms to modes of experience with which we have been, in their practical aspect, intimately acquainted since childhood, and with which we are not improbably quite well satisfied as they stand, is apt to seem a work of supererogation. Not only is one tempted to exclaim, with the pupil whom I quoted at the outset, that we are being told what everyone knows in language which nobody can understand; but one feels a craving for what shall appeal to one as in itself new and fresh; one longs to be doing something less bovine than chewing the cud of experience already cropped; one perhaps wonders whether one might not be better employed than in re-labelling the specimens in our private mental museum!

The question, therefore, forces itself upon the attention of those who believe that psychology is of real value to teachers whether there is not something radically wrong, or at least defective, in the commonly-accepted methods of the English psychological teacher, and whether by reforming these methods we may not secure more willing attention, more lively interest and more satisfactory results.

I have for some years entertained the opinion that some such reform is desirable, is practicable and is likely to be efficacious. I conceive that if teacher and taught participate in some investigation which shall at one and the same time provide new facts and observations, and also afford opportunities for their psychological interpretation, a freshness and vitality, otherwise lacking, will be attained. The fact that psychology is far more zealously studied in America than in England is, I believe, largely due to the partial application of such a reform to the teaching of the subject. But we must remember that in the United States they are not so hag-ridden by stereotyped examinations as we, for our sins, are in England.

The investigation on which I am basing my psychological teaching this session at Bristol is the relation of stimulus to sensation in visual impressions, such visual impressions lending themselves readily to class demonstration.

When a disc with equal black and white sectors is rapidly rotated, the effect in sensation is a uniform grey. But this uniform intensity is not for sensation half-way between that produced by black alone and that produced by white alone. Regarding the black and white sectors as the stimulus, experiment shows that 50% of white stimulus does not afford 50% of white sensation, but something like 80%. Here emerges that essentially human question "Why?" only to be answered in rational terms of "Because."

Do we as science teachers sufficiently realise the importance of fostering this why-attitude of mind? Some of us, no doubt, do so; but are we not all at times too apt to forget that mental appetite is the natural precusor of mental assimilation? We are sometimes in such a hurry to explain in general terms that we do not allow time for the need of explanation to be felt in form of that refined curiosity which craves for intellectual satisfaction. And we are, perhaps, guilty of that educational topsy-turveydom—alas, only too familiar in the painful pages of our grammars—which consists in giving first the general principle or rule, and then the particular observations or examples. Unless I wholly misread the normal course of mental sequence, the first stage is that of observation presenting facts which demand explanation; the second stage, that of discovery, affording principles which embrace and harmonise the observations; and the third, that of testing the principles and applying them not only to the old observations, but to other facts which, if the principles be true, should fall within their sphere of explanation. If we omit the first stage, we may stuff our pupils like Strasbourg geese, but we are not fostering the natural appetite of knowledge, if, indeed, we are not stifling the healthy cravings of curiosity.

It is, then, shown that a half-way sensation between black and white is afforded by about 20% of white stimulus. If we term this half-way sensation mid-grey, we may next proceed to get other half-way sensations between mid-grey and white, on the one hand, and on the other hand between mid-grey and black. Thus we obtain a series of values from which a general principle may be extracted, that equal increments of sensation require stimuli in geometrical progression. By using colours instead of black and white, we may extend our series of observations and make our generalisation broader by showing that in all cases the above principle holds good.

The method here suggested—that of dealing with questions of mental assimilation as they arise in the course of an investigation—might be further illustrated with a fulness of detail which would here be out of place.[1]

But apart from such interest as one may have succeeded in stimulating in the solution of an intellectual problem, in satisfying the hunger for explanation, in showing how the hunger arises and how it may be satisfied, the whirling discs are in themselves pretty. Those which give a satisfactory shading from red or orange into blue seldom fail to elicit signs of appreciation. And this affords an opportunity for a discursus into the psychological nature of æsthetic appreciation, while from first to last the importance of a high standard of accuracy and

[1] In the address as given such fuller detail was introduced. Owing to lack of time, the concluding paragraphs were not delivered as here transcribed.

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sincerity in the investigation should afford examples of moral ideals and suggest questions with regard to their psychological genesis.

Having thus participated in a little piece of scientific investigation—with, of course, more references to its psychological aspect than I have had time to indicate—the whole may be reviewed with the object of ascertaining the nature of our conception of causation from the physical, from the psychological and from the metaphysical point of view. Science teachers will, I fear, shudder at the introduction of any reference to metaphysics; but they will, perhaps, take comfort when I hasten to explain that it is introduced with a view to the exclusion from physical and psychological science of conceptions which have no valid *locus standi* therein. Both physics and psychology should deal with observed or inferred sequences of phenomena, and the word "cause" should mean for them as branches of science the related antecedents of any given phenomenon, not the *raison d'être* of the existence of phenomena, which is the metaphysical meaning of the word "cause." If I ventured to discuss this question, I should, I fear, be putting my hand into a hornet's nest; I should have to tell those of you who are physicists that, when you speak of force as the cause or *raison d'être* of motion in material bodies or particles, you are unconsciously dropping into metaphysics, as Mr. Silas Wegg unconsciously dropped into poetry; I should have to tell the chemists that, when they speak of chemical attraction as a cause in this sense, they are referring the phenomena with which they are well acquainted to an underlying metaphysical something concerning the nature of which they are, as men of science, completely ignorant, or rather let me say with regard to which they ought to assume the attitude of agnosticism. As men of science, we find that things actually do a number of things which it is our privilege to study. What makes them dance to this marvellous tune is beyond our fathoming with any scientific plummet. It's a way they have, and from the point of view of science there's an end of the matter. In the same way I should exclude from the science of psychology all reference to the Will as a cause of the sequence of states of consciousness. Don't suppose, however, that I am seeking to exclude Force and Will from human thought. I am of opinion that a rational being is by nature a metaphysician, conscious or unconscious, good or bad—too frequently bad, and all the worse for being unconscious. But I am also of opinion that the more rigorously he excludes metaphysics from science the better it will be for science.

There are three more points to which I would briefly call attention. The first is that the members of the class should be required to describe the observations they themselves make in the course of the demonstration, and should be led to pay attention to the mental process—and the sequence of ideas—which are their accompaniments. The object of a description is to suggest a mental sequence in the mind of him for whom the description is framed. The psychological aim should therefore be to form a clear perception of what the desired mental sequence is, to focus the relations which are requisite to enchain this sequence, and then to translate the sequent terms and the relational links into language which shall express them without unnecessary circumlocution. Much ambiguity in the use of language is due to lack of anything like a clear-cut psychological perception of the mental sequence which a description or explanation has to evoke in the recipient mind.

The second point is that the sequence of mental states in the case of the discovery of principles or of the process of logical inference differs markedly from that due to simple association. This distinction has to be brought out in ways which are familiar to psychologists, but which need not be illustrated here. Cramming relies on simple association; it is a matter of mere memory. But discovery and the comprehension of logical connections involve the perception of links which are invisible to the eye of sense.

And the third point is that the investigation should, if one may speak Hibernically, conclude with a historical introduction. No doubt this will seem like putting the horse behind the cart; but just as psychology teaches that logic is the afterthought of insight, supplying its subsequent justification, so does sound method, I conceive, enjoin that historical sequence cannot be profitably traced until there has been established an adequate knowledge of the leading facts with which history deals after its appropriate fashion. The historical order of sequence is by no means necessarily that which is best for didactic purposes. The true value of history, apart from the ideals which it embodies, is its lesson that the present has its roots firmly embedded in the past, and that to-day is the product of an evolution which pre-supposes yesterday. If we know little or nothing of to-day, the bearing of yesterday thereon cannot be made clear. In spite of precedent, therefore, I am Irish enough to reserve my historical introduction to the end.

I am well aware that the attempt, which I have here rather hinted than sketched, to render psychological teaching of value to those who are themselves teachers is imperfect and full of shortcomings. The question I ask you to consider is whether it is faulty in principle. Is the method sound—that of making the psychological treatment of mental sequence and synthesis arise directly out of some particular investigation (not, of course, necessarily that which I have indicated) which shall provide new facts and suggest particular modes of sequence and synthesis? At any rate, I am giving it a trial. I endeavour not to use language which nobody can understand, and I venture to hope that I do not only tell my pupils what everyone already knows.

ON THE FITTING UP OF CHEMICAL LABORATORIES.[1]

By Professor J. B. COLEMAN.
South-Western Polytechnic, Chelsea.

SINCE analysis does not occupy the prominent position in a beginner's chemical course that it formerly did, it is now possible to design a chemical laboratory in which the facilities for performing analysis may be almost dispensed with.

In the laboratory, of which a description is given below, no analysis is performed, since a separate laboratory is provided for that purpose.

The fittings of a laboratory seem to fall naturally under two headings:—(1) The general arrangement and position of the benches and tables, and the draught, gas, water, waste supplies and connections; (2) The special arrangements of the bench and its accessories (Fig. 1).

General Arrangements of Laboratory.

In designing this laboratory the following conditions have been fulfilled as far as possible:—

(*a*) Plenty of room for each student to work.

(*b*) Easy access to, and supervision of, each student by the teacher.

(*c*) Central draughts and other arrangements to reduce moving about to a minimum.

(*d*) Facilities *in the laboratory* for writing up in ink rough pencil-notes, without interfering with bench experiments.

[1] Abstract of an Address to the Conference of Science Teachers held in connection with the Technical Education Board of the London County Council on January 10th, 1901.

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The benches are arranged in six blocks of four benches each, thus accommodating twenty-four students at one time.

This arrangement of the benches allows plenty of space for each student and excellent supervision by the teacher. The teacher may rapidly get from place to place, and since there are no obstacles to obstruct the view except the upright flue (or flue

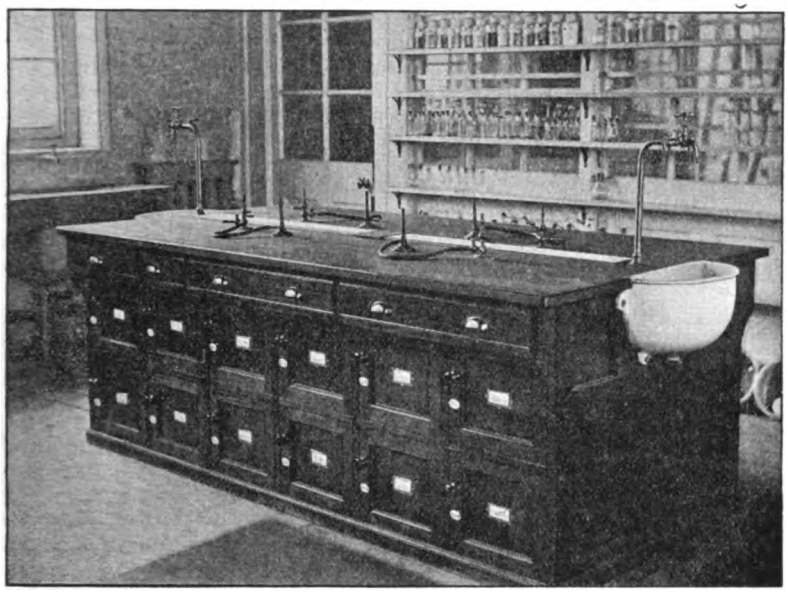

FIG. 1.

and hoods where the latter are in use), he is able to control the whole of the students from any part of the laboratory. Along two sides of the laboratory, close to the walls, are fixed long narrow tables.

At the close of the lesson (or before, if it is thought desirable), when the student wishes to transfer the rough notes to his laboratory book, he leaves his bench and walks across to one of the long tables where pens, ink, &c., are ready.

The balances are kept on one of the long tables, and simply moved out of the way (or on to the window-sills in this case) when table room is required for writing up notes. The balances are fitted with agate edges, and when not in use are protected with glazed covers.

A stone table, supplied with gas, water and waste, holds the necessary bath, steam ovens and furnaces. An iron hood, connected with the draught flue, should be placed over the stone table.

A continuous draught cupboard, with four sliding doors, is also provided. Since most operations can be performed under the bench draught-hoods, this chamber is used only for very corrosive fumes or bulky apparatus. Two blow-pipe tables and a stand for a ten-gallon jar of distilled water are also provided.

The draught from each bench is conveyed downwards, and then along and under the floor in lead-lined flues which are exhausted by an electric fan. Of course direct upright flues may be substituted. The waste from each bench after being trapped (see description of bench) is conveyed to a central lead-lined trough which runs down the centre of the floor, and finally escapes outside.

The wall space between the windows is filled with shelves for holding bottles containing the liquids and solids required by the students. The general apparatus, such as pneumatic troughs, gas jars, Woulffe's bottles, &c., are stored on a series of shelves of diminishing size attached to the blank wall of the laboratory, the upper shelves being used for stock chemicals.

Special Bench Arrangements.

In designing the working bench the following conditions were considered requisite:—

(*a*) Each student to possess a separate set of apparatus stored in a cupboard immediately against his working bench.

(*b*) Ample water, gas and waste arrangements for each student, and, what is most desirable, a central draught-hood for each pair of students.

(*c*) General bench apparatus, frequently in use and not too bulky, to be stored below the bench for each pair of students.

(*d*) A few bench reagents, so *arranged as not* to intercept the view of the teacher.

The general appearance of a block of four working benches is seen in Fig. 1. It will be seen that the arrangement shown enables a student to utilise the whole of his bench top, since the sinks are attached to, not let into the bench top. This position of the sink also keeps the bench much cleaner. When not in use the draught-hoods are taken off, the flue blocked by a wooden plug.

As seen from the figure, each block contains twenty-four cupboards. They measure about 18 in. long, 14 in. wide and 12 in. high, and are quite large enough for an elementary student. There are 144 cupboards in all, hence ample cupboard accommodation is provided for that number of students. By suitably allotting the cupboards, at least six sets of students may use the laboratory weekly, and each work close against his own cupboard.

The drawers seen above are divided into compartments and contain general apparatus frequently wanted by students, such as glass tube, tapers, spills, corks, cork-borers, files, &c. This facilitates work and prevents unnecessary walking about.

Ample water supply is insured by supplying one standard to two students. The standard carries one large screw-tap for filling large vessels, and two smaller plug-taps for ordinary use.

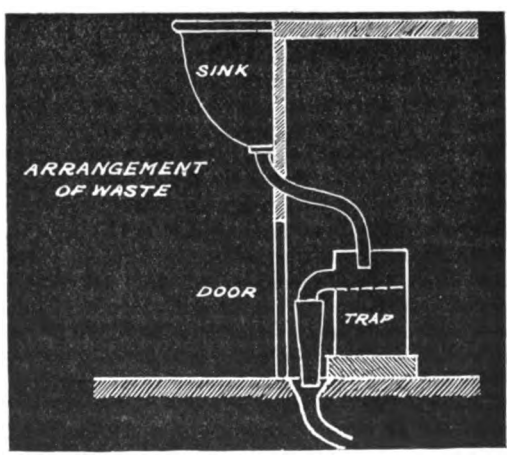

FIG. 2.

The sink is capacious and ten inches deep, so as to hold a false bottom of perforated teak to diminish breakages and prevent solids being carried through.

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The waste liquid, after passing through the sink, should be properly trapped. A good stoneware trap serves the double purpose of retaining any solid matter and of diluting acid liquids, so that they do not act greatly on the leaden waste service.

A convenient trap is shown in Fig. 2. It is connected by means of flexible rubber-tube with the leaden waste-pipe. The trap is thus easily disconnected. It should be cleaned every three months.

The gas supply to each student should be ample. As seen in Fig. 1, one distributor is supplied for each student. Each distributor contains one upright cock fitted with a bat-wing burner for glass bending, and two horizontal taps for use with bunsen or other burners.

The draught arrangement to each bench consists of a lead-lined wooden flue rising from the horizontal floor flue to a distance of 20 inches above the bench top. Two hoods 15 inches across fit into the upright flue, so that one hood serves two students. The hoods are made of enamelled iron, and when fitted are 12 inches from the bench top. The hoods are fitted into their sockets when required, the openings being closed by wooden plugs when the hoods are not in use. The use of a central draught suffices for all ordinary operations and greatly prevents the pollution of the air of the room by acid and other fumes. In the above arrangement of flues, where knee upright flues are connected with the same horizonal flue, it is found necessary to partially choke the nearer hood flues by means of a valve, so that the draught may be equal in the three cases.

THE RESOLUTIONS OF RECENT CONFERENCES.

Headmasters' Conference.

THE last annual meeting of the Headmasters' Conference was held at Bradfield College, the Rev. Dr. H. B. Gray presiding. During the two days' meetings the following resolutions were adopted :—

(1) That, in order to construct an effective register of teachers, and for other reasons, it is desirable that the education authorities should be empowered to undertake without delay a statistical survey and register of secondary schools.

(2) That the Conference approves Resolutions 1, 2 and 3 contained in the Memorandum of the Joint Committee so far as regards the registration and training of teachers in secondary schools, namely: (1) That candidates for admission to the register of teachers should be graduates of a British University, or should be in possession of a diploma equivalent to a pass degree; (2) That they should hold a certificate, approved by the Consultative Committee, that they had followed a course of training in the theory and practice of education subsequent to their graduation; (3) That they should give proof of two years' efficient service in a school approved for the purpose.

[A rider—That, with regard to present teachers, those qualified under clauses 1 and 2 should be admitted to the register at once—was added. Also a proviso: But, in the judgment of this Conference, it would be better to omit the words "subsequent to graduation" in clause 2.]

(3) That the exemption of one year's service as articled clerk to a solicitor at present granted by the Incorporated Law Society to those who have passed certain University examinations might with advantage be extended to those who have passed any other examination accepted by the University as an equivalent.

(4) That the Committee be instructed to confer with all such examining bodies as control the preliminary examinations accepted by the Medical Council with a view to establish a Joint Board for the conduct of such examinations.

(5) That the Committee be instructed to represent again to the authorities of the War Office the very serious consequences resulting from the present regulations as regards the examination of candidates for commissions in the Army passing through the Militia.

(6) That it is desirable tnat the organisation of Volunteer corps in public schools should be placed upon a more satisfactory footing than heretofore, and that a special Committee be appointed to consider the question and report to the Committee of the Conference.

(7) That in any examinations in French and German held in schools by an outside authority no set books should be prescribed.

(8) That *viva voce* examinations in modern languages should be encouraged in school teaching and school examinations conducted by school authorities.

(9) That this Conference disapproves of athletic sports organised by external clubs and associations for boys in public schools.

National Union of Head Teachers.

At the annual Conference of the National Union of Head Teachers held at Norwich on January 2nd and 3rd, the following resolutions were adopted :—

(1) That this Conference condemns the long-continued attacks on the schools of science which are under the control of School Boards, and is of opinion that the position of these schools should be legalised at once if that should prove to be necessary.

(2) That the Board of Education is interpreting the minute on the higher elementary schools in such a way as to injure the cause of national education.

(3) That the Conference deplores the attempt to stereotype the higher elementary school as an "elementary school of science," because in all large industrial and commercial centres another type of school giving a training for commercial pursuits is at present urgently required.

(4) That in the opinion of this Conference the local educational authority is the best judge of the type of school suited to the local needs, and the liberty with regard to curriculum which the Code extends to elementary schools in general should be extended to the higher elementary schools.

(5) That the provisions of the minute which (*a*) exclude all children from higher elementary schools who have not previously attended a public elementary school for two years, (*b*) require all children entering a higher elementary school after November 1st, 1900, to begin with the first course, (*c*) cause scholars to be expelled because they are 15 years of age, are detrimental to the public interest and should be at once withdrawn.

The Modern Language Association.

The annual general meeting of the Modern Language Association was held at the University College, Liverpool, on January 3rd and 4th. Dr. Richard Garnett, the late Keeper of Printed Books in the British Museum, presided.

The following resolutions were adopted by the Association :—

(1) That every effort should be made to maintain the scholarly and literary side of modern-language teaching, as well as the practical side.

(2) That a modern language should be substituted for a classical language in every University matriculation, entrance, or first public examination.

(3) That no examinations in modern languages, especially those of a commercial character, can be considered satisfactory that do not include a *viva voce* test apart from dictation.

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(4) That a sub-committee be appointed to consider the methods of *viva voce* examinations adopted by examining bodies.

(5) That the principles of the *Allgemeiner Deutsche Sprachverein* are worthy of the hearty support of this Association.

Assistant-Masters' Association.

The following were the chief resolutions passed at the annual general meeting held on January 8th at Christ's Hospital:

(1) That no scheme for the organisation of secondary education can be satisfactory in which provision is not made for obtaining and considering the views of assistant-masters.

(2) (*a*) That the meeting expresses its sense of the urgent need of the formation of a register of teachers in accordance with section 4 (a) of Board of Education Act.

(*b*) That it be a recommendation to the Board of Education to instruct the Consultative Committee to proceed *pari passu* with a classified register of schools.

(*c*) That this meeting, without pledging itself as to details, expresses its general concurrence with the principles for the registration of future teachers laid down in the memorandum of the Joint Committee on the Training of Teachers.

(*d*) That the interests of secondary education require that the recommendation of the Bryce Commission relative to the non-employment after a certain lapse of time of unregistered teachers in secondary schools should be made law.

(*e*) That copies of the above resolutions be sent to the President and Vice-President of the Board of Education, and to the members of the Consultative Committee.

(3) That it is of the utmost importance that some agreement should be arrived at between headmasters and assistants as to what is considered the custom of the profession with regard to notice on the dismissal of an assistant in the absence of a special contract.

Incorporated Association of Headmasters.

At the annual general meeting of the I.A.H.M. held at the Guildhall, E.C., on January 9th and 10th, and presided over by Dr. Gow, the following resolutions were adopted:—

(1) (i.) That this Association is of opinion that the establishment in England of local education authorities, to be responsible to the Board of Education for the local control of secondary education, is of urgent national importance.

(ii.) That this Association welcomes the Lord President's Education Bill, 1900, in so far as it provides—(*a*) that local education authorities for education other than elementary shall be constituted by scheme; (*b*) that such scheme shall originate with the council of the administrative county or county borough; (*c*) that such scheme shall require the approval of the Board of Education before becoming operative.

(iii.) That this Association is, however, strongly of opinion that it should be required by statute—(*a*) that the scheme shall provide, *inter alia*, for the inclusion on the proposed authority of persons having expert knowledge as regards secondary education; (*b*) that the proposed authority shall be made responsible for the supply of secondary education within its area.

(iv.) That this Association is further of opinion that—(*a*) such local education authority should be invested by statute with definite powers over all schools, however administered, within its own area, such statutory powers to vary with the nature of the administration of the schools or institutions concerned; (*b*) that the various rating powers for educational purposes should be unified; (*c*) that these powers should be vested in a single local authority within each administrative area.

(2) That this Association approves the minute of the Board of Education establishing higher elementary schools, as containing the initial conditions for a satisfactory differentiation of primary from secondary schools under an organised system of secondary education.

(3) (i.) That, in the absence of special agreement, notice terminating the engagement of an assistant-master should expire at the end of a school term, and should be given not later than seven days from the beginning of the term at the end of which it expires. The Association believes this to be the custom of the profession.

(ii.) That it conduces to the efficiency of schools that the headmaster should have the sole power both of appointing and dismissing assistant-masters.

(iii.) That it should be the duty of the headmaster to report, at the next meeting of the governors, each change on the staff.

(iv.) That an assistant-master summarily dismissed for misconduct should have no appeal save to a law court.

(v.) That an assistant-master dismissed with notice should have the right of making, within six months after receiving such notice, a written presentment of his case to the governing body of the school.

(vi.) That provision should be made by which, on the motion of the governing body, an official inquiry should be held by or on behalf of the Board of Education, and the result thereof should be formally communicated to the parties concerned and the governing body.

(4) That this Association is of opinion that, on and after April 1st, 1905, in the case of those seeking admission to the register of teachers as qualified to teach in secondary schools, the following should be the conditions:—

(i.) That candidates for admission should be graduates of a British University, or should be in possession of a diploma, approved of by the Consultative Committee, equivalent to a pass degree.

(ii.) That they should hold a certificate, approved of by the Consultative Committee, that they had followed a course of training in the theory and practice of education.

(iii.) That they should give proof of two years' efficient service in a school approved for the purpose.

(5) (i.) That the headmaster of a school of science may submit for the approval of the inspector a graded course of instruction in science, arranged in four consecutive courses each of a year's duration.

(ii.) That in such courses for years 1 and 2 the *minimum* time to be allotted to mathematics and science be reduced by two hours.

(iii.) That the *minimum* time to be allotted to literature and language work be raised by two hours.

(iv.) That manual instruction be not required in the case of secondary schools.

(v.) That a school of science need not contain more than 15 pupils.

(vi.) That the grant obtainable under the existing advanced stage examinations be awarded in the case of secondary schools on the results of inspection and examination according to the third and fourth years' courses, as provided under (1) above.

(6) That in the opinion of this Association more attention should be paid to the teaching of the mother tongue in secondary schools, especially in the direction of literature as distinguished from grammar and composition.

(7) That it be referred to the Council to consider whether the *minimum* number of compulsory subjects should be increased in the Oxford and Cambridge Local examinations.

(8) That, in the opinion of this Association, it is highly desirable, as an aid to organising secondary education, that a survey, after the manner of that conducted by the Schools Inquiry Commission, 1864, of all schools other than elementary schools in England, should be conducted by the State, provided that no delay in legislation be incurred thereby.

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THE TEACHERS' GUILD AT BRIGHTON.

The eleventh Conference of the Teachers' Guild was held at Brighton on January 9th and 12th. About 300 members attended, but, to judge from the meetings, the women were greatly in excess of the men. There was also a lack of spontaneous debate, which is much to be regretted. We cannot but lay this fault at the door of the organising committee. When resolutions to be proposed are not printed and circulated beforehand, it is impossible for speakers to do justice to the subjects they have to consider. A protest was made on the first day, which we hope will have the effect of making the procedure more business-like. Some of the resolutions lately drawn up by the Council of the Guild, as those on the Training of Teachers, are remarkably practical and statesmanlike; but the general meeting ought to be taken more seriously.

We have not space to deal fully with all the points touched upon by the Conference, so we shall just indicate what seem to be the most important. Canon Lyttleton, the chairman, in his opening address, spoke of the public apathy towards education as a result of the crowd of interests which engage our attention. But he pointed out that education is not one of the crowd; sound education underlies all prosperity, and it is necessary to imperial strength, to commercial success and to healthy national life. Hence it must be every man's chief concern, and none could afford to neglect it. He suggested a conference between commercial and educational leaders. Teachers might by this learn what men of business want, and business men might be brought to see that the groundwork of education has nothing to do directly with trade; it is a foundation on which other things are built, a training for life, not a cramming with technical details. This is a very fruitful suggestion. He drew attention to the scandalous neglect of music in England, which has brought us down from Purcell to Tarara-boom-deay. He touched on the burning question of religious education, but was needlessly contemptuous of the cry for "undenominationalism."

We may add here a note or two from his address to parents, delivered at a preparatory school in the town. Here he pointed out the great value of constant communication between parents and teachers, and stated, with regret, that the one thing parents are interested about in education is the supply of food. He was of opinion that boys are overfed in schools. Be that how it may, it is true that the food question is all-important in the public eye, so much so that weight is often given, in appointing headmasters, to any experience they may have had in catering!

A resolution was passed as to the Local Authorities to be formed for administering education; and it was felt that these ought to be so constituted as to control a large area, to include men and women experts, and to administer all kinds of education within the area. Special committees should be appointed for the various branches of education. Attention was drawn to the excellent work done by private schools, whose fair interests must be safeguarded.

We are glad to see that the subject of Open Scholarships and Free Places in schools has begun to engage the attention of the educational world. This was treated by Mr. L. W. Lyde from the point of view of the small endowed school, and by Mr. W. H. D. Rouse from the point of view of the public school. It was proposed to abolish free places altogether, as being a burden on schools which galls cruelly, and to make scholarship grants (1) dependent on pecuniary need, and (2) to be given in the form not of money, but of further education. It is certain that large sums of money are wasted by the present system, though money is badly wanted for payment of adequate salaries to the teachers, and that premature forcing and a commercial spirit are fostered.

Mr. W. M. Keatinge gave a lecture on "What makes a Good Lesson." He reminded his hearers of a fact often forgotten, that a lesson should be part of a series, and that one can only be judged in its relation to the others. He urged the value of variety, of expectation, and of the solving of problems; deprecated too much help, and pointed out the necessity for preparation. To sum up, theories and knowledge may do much, but the great influence is the personality of the teacher.

The remaining subjects of the Conference we can but mention. Sir Joshua Fitch and Mr. A. F. Leach dealt with the Redistribution of Educational Endowments, Dr. Wormell and Mr. J. F. Blacker with the question of Higher-Grade Board Schools, which has lately become pressing since the judgment of Mr. Justice Wills. Mr. P. A Barnett lectured on Educational Values, and Dr. Draper, of the Brighton School of Science, showed some interesting experiments.

The death of Her Majesty the Queen has caused the whole British nation to shake with sorrow. As love begets love, so Queen Victoria's affection for her people created ties of attachment and veneration which will long be cherished, and will have a profound influence upon future history. When Her Majesty ascended the throne in 1837, she declared, "I shall steadily protect the rights, and promote to the utmost of my power the happiness and welfare, of all classes of my subjects." We who have lived under her reign know how well this promise was kept. Throughout time, the Victorian era will be used to mark the commencement of an epoch of scientific advance and intellectual freedom never before equalled. The nation mourns that the life which watched over its best interests and nourished its highest aspirations has passed into the beyond.

ITEMS OF INTEREST.

GENERAL.

We shall next month resume our test-papers for the most popular public examinations, continuing this series month by month until completed. Two revision tests in the most largely-taken subjects of the Senior, Junior and Preliminary Oxford Local Examinations will appear in March and June. In April we shall publish revision papers in the chief subjects of the Lower and Higher-Grade Examinations for Scotch Leaving Certificates, while in May similar revision test-papers for the London University Matriculation, as well as for the Second and Third Class Examinations of the College of Preceptors, will appear. Reprints of many of the papers which appeared in The School World during 1900 can still be obtained.

The decision in the important case "Regina *versus* Cockerton" was made the day after we went to press with our last issue. It was consequently impossible to comment upon it. As most of our readers know by this time, the London School Board were non-suited on every count. To prevent misapprehension it is advisable to recapitulate the leading facts of the case. A district auditor, dealing with the accounts of the London School Board, disallowed certain sums paid out of the rates for the teaching of science and art, according to the "Directory" of the South Kensington branch of the Board of Education. Permission was obtained to bring these disallowances before the

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Queen's Bench, with a view to having them quashed. But Mr. Justice Wills and Mr. Justice Kennedy have upheld the view taken by the auditor.

MR. JUSTICE WILLS has laid it down that "it is not within the power of the Board to provide, at the expense of the rate-payers, science and art classes in day schools . . . Science and art classes in evening continuation schools are as much beyond the scope of rate-aided education as in day schools; but that in both such educational work may be carried on by the School Board provided the whole of the funds required for it are furnished from sources other than contributions from the rates." Before giving his judgment, in which Mr. Justice Kennedy concurred, Mr. Justice Wills expressed the opinion that "the importance of the subject demands that the questions raised should be decided by the House of Lords. Until this is done there can hardly be any disturbance of the existing order of things without the most enormous inconvenience."

WHAT is to be done? For nearly a quarter of a century instruction of the kind under dispute has been given by many great School Boards, largely at the expense of the rates, with the frankly expressed approval of the Whitehall Department. If the judgment is upheld in the House of Lords it is difficult to see how, without further legislation, the higher-grade schools, which in the large towns of the North and Midlands provide the only chance the children of working people have of obtaining higher education, are to be maintained. We agree with the *Journal of Education* that the condition of things which has arisen provides the Duke of Devonshire with an excellent opportunity for obtaining a new Act. In commenting upon the decision *The Times* said:—"By showing up the existing confusion and to some extent aggravating it, the judgment may, perhaps, hasten some comprehensive scheme for classifying education in a rational way." Cannot something be done to evolve order out of the present condition of educational chaos? Verily there is need of improvement, and without the initiative of a strong Minister of Education there is little hope that our scattered forces will fall into line, producing an ordered system of education which will enable us as a nation to compete on something like equal terms with the better-instructed foreigner.

THE long struggle is over, and the student of French grammar must be satisfied with the very small concessions granted him by the French Academy. A joint committee has been appointed by the Council of Education and the Academy which is to draw up rules that will be few but "definitive." We may expect to find the following amongst the points agreed on:—The omission of certain apostrophes and hyphens. The use of the plural "s" with proper names. Some alterations in the agreement of adjectives. The invariability of certain participles (*excepté, ci-inclus*, &c.). The omission of "s" with certain numerals. The disuse of *ne* in many subordinate clauses, and a slight relaxation of the rule of "Sequence of Tenses."

THE fact that a register for teachers shows signs of becoming a reality is already having an influence upon the general estimate of the value of training to a teacher. No fewer than 406 candidates entered for the January diploma examination of the College of Preceptors. The annual winter meeting of teachers at the Bloomsbury institution has been more largely attended than in former years, and the students seemed to us to treat matters more seriously than is their wont. Even if all this enthusiasm is to be traced to the commercial value which a certificate in the theory of education is likely to have very soon, yet the fact that an interest in pedagogic principles has been developed is distinctly "something to be thankful for."

IT is a little doubtful whether the meeting on January 16th, at University College, London, has brought a General Educational Council nearer realisation. As our readers may remember, an organising committee was appointed by a representative conference of educationists held last June to draft a constitution for a National Educational Council. Such a constitution was submitted to a second conference at the time and place named, but the results of a deliberation of upwards of two hours were merely to change the word "national" to "general" in the name of the Council, to alter the wording of the preamble in a few minor respects, to reduce the verbiage of the statement of the object and scope of the work of the Council, and to entirely recast the clauses dealing with the composition of the Council. A consideration of the list of associations in England and Wales to be invited to send members to the Council, and the number of members each association should send, brought into high relief the difficulties yet to be overcome. The meeting eventually referred the printed list back to the organising committee for reconsideration.

YET, as the Lord Bishop of Hereford, who presided, said, there is a real need of such an educational senate for the whole of England. The ignorance and torpor of the public in matters of education are very real. The chief thing necessary just now is stimulation and enlightenment for ordinary men and women; they must be got to care about and understand educational necessities. It is in such pioneer work that a General Educational Council might be of great value. But to command the respect of educationists of all ways of thinking the composition of the Council should be as simple as possible; and to avoid what Dr. Percival called the difficulty of evaluating the various associations, it will probably be found best to give every body of teachers the same representation. We trust the difficulty before the organising committee will not lead to the question being indefinitely postponed.

THE Conference of Science Teachers held on January 10th and 11th at the South-western Polytechnic (Chelsea), in connection with the Technical Education Board of the London County Council, was in many respects highly successful. The advertised programme, to which we made reference in our last issue, was adhered to in every respect. The attendance, too, was very good, reaching the respectable total of 350, compared with 200 in 1900, and 80 in 1899. But at all the meetings too much was attempted. Half the number of papers thoroughly discussed would have been more useful to the teachers present. But to be really valuable the discussions would have to be very differently managed. At the last Conference, and indeed at all three meetings which have now been held, the discussions consisted almost entirely of casual remarks on things in general. To ensure a good result from the Conference, the discussions might with advantage be started by one or two well-known teachers into whose hands copies of an abstract of the paper have been previously placed, so that they may have an opportunity of preparing what they wished to say. We have pleasure in directing attention to two of the papers at this Conference which we reprint elsewhere.

MORE recently the science masters in public schools have held a similar conference. A very successful meeting took place on January 19th at the London University, when Sir Henry Roscoe, F.R.S., presided. Upwards of fifty masters were present. The subjects discussed were of the greatest interest to science masters generally. Mr. C. E. Ashford (Harrow) opened a discussion on the order in which the branches of science should be taught. Mr. W. D. Eggar (Eton) introduced the question of the co-ordination of the teaching of mathematics and science. Mr. A. Vassall (Harrow) described the place of natural history societies and field work in biology and geology in a public school. The limit and scope of the science required for Government and Army examinations were

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passed in review by Mr. C. Falkner (Weymouth). Mr. O. H. Latter (Charterhouse) explained the teaching of science to forms generally, and also to special divisions.

The discussions which followed the short papers by the masters named were well maintained, and gave abundant evidence of the existence of much enthusiasm among the science masters of public schools. We were particularly impressed with Mr. Eggar's advocacy of the introduction of "practical" mathematics into the public schools, as well as the sympathetic support given by Mr. G. H. T. Hurst (Eton) to the scheme of mathematical teaching drawn up by Prof. Perry, F.R.S. It was evident from the remarks made by various speakers that rational methods of teaching science and the rudiments of mathematics have been introduced wherever possible, but that little more progress can be made until the Universities of Oxford and Cambridge change the character of their scholarship papers. Most science and mathematical masters are anxious to adopt reformed methods, but the headmasters and the old universities are not in sympathy with them.

In moving the first of the resolutions at the annual general meeting of the Assistant-Masters' Association (p. 65), Mr. T. E. Page made out a strong case for the claims of assistant-masters to have their views on the organisation of secondary education considered. Mr. Page said that in the realm of education assistant-masters are the outlanders who do all the work and are yet refused the pedagogic franchise. The comparative inability of headmasters to handle matters of vital import was indicated by their devotion of much time at their recent conference to a discussion of the best means of reforming the War Office! Commenting upon the proportion of clerical and lay headmasters, Mr. Page made a felicitous allusion to the latest pronouncements of "the church militant" at this conference. He reminded his hearers that sound theology—and some learning—conditioned the majority of appointments to headmasterships, a remark that was greeted with hilarious approval. The action of the authorities of Grantham Grammar School in maintaining the principle that with the departure of the headmaster the dismissal of the assistants took effect automatically found a close analogy in the custom prevalent in Central Africa of sending the ministers of a deceased potentate to accompany him through the "Shades." In combating the contention that it was the duty of the governing body of a school to give the headmaster illimitable power with respect to his assistants, Mr. Page insisted on the necessity of the latter taking thoroughly to heart the lesson inculcated in the parable of the Importunate Widow.

The Geographical Association now numbers 134 members, and is represented in 84 schools and colleges. The Association is open to teachers of all grades, but of the 34 new members enrolled in 1900 not one was an elementary school teacher. This is much to be regretted, since the facilities offered to members of the Association for the hire of lantern-slides suitable for geographical teaching would be of especial value to the teachers of geography in elementary schools. At the successful annual meeting of the Association, held on January 9th, Mr. Douglas W. Freshfield, the President, exhibited a splendid series of lantern-slides illustrating his recent journey in the Sikhim and Nepalese Himalaya, and Mr. T. G. Rooper, who has given great attention to the development of the practical teaching of geography, delivered a lecture on this subject. Dr. A. J. Herbertson, Assistant Reader to the Oxford University School of Geography, will be glad to hear from new members.

Prof. H. L. Withers, in his presidential address to the Association and Lecturers in Training Colleges, referred at some length to the important question of the education of pupil-teachers. A great improvement has, very fortunately, taken place in recent years in the training which a pupil-teacher in our great towns receives, but the education of the pupil-teacher in the country has undergone little change. Yet the training colleges are almost entirely dependent upon the ranks of pupil-teachers for their students, and unless their preliminary education has been satisfactory a great part of the all too short period at college is frittered away upon an ordinary secondary school curriculum. It seems to be a question of expense. But, somehow, more of the time of the rural pupil-teacher must be given to learning and less to practice in teaching.

The special arrangements made in connection with the work of the second term of the current session at University College, London, include many items likely to be very interesting to schoolmasters and schoolmistresses in and near London. The free public lectures in French on Wednesday evenings at 8.30 p.m. will enable teachers and students of modern languages to obtain some useful practice in following spoken French, and at the same time acquaint themselves with several aspects of French literature. The numerous courses of lectures, a list of which can be obtained from the Secretary, Dr. T. G. Foster, will be found to contain something appropriate for teachers of most subjects.

Secondary, as well as elementary, schools are beginning to appreciate the advantage of having upon their staff one or more teachers acquainted with the theory and practice of school hygiene. With the object of making such knowledge easy of access a course of training in practical hygiene for teachers has been arranged. Thirty lectures are to be given on Saturday mornings throughout the three terms of the year 1901, and will be held partly at Bedford College for Women and partly at the Sanitary Institute. It will include practical demonstrations, and visits to schools and places where the application of hygiene in practice may be seen. The various subjects will be dealt with by well-known authorities, and will be illustrated by experiments, diagrams, drawings, models, and lantern slides. Opportunities will be given to students to obtain practical acquaintance with the various subjects dealt with in the laboratories of Bedford College, and for practical demonstration of sanitary appliances in the Parkes Museum. Teachers and students desirous of attending the lectures are requested to send in their names at once to either the Principal, Bedford College, or to the Secretary of the Sanitary Institute.

The sixth volume of "Special Reports on Educational Subjects" has been published. It deals in some 531 pages with "Preparatory Schools for Boys: their Place in English Secondary Education." In its preparation Mr. Sadler has the valuable assistance of Mr. C. C. Cotterill, who has acted as honorary co-editor of the reports. We have arranged to deal with this important volume at considerable length next month; the many demands upon our space make it impossible for us to do justice to the book in this issue.

The ninth Congress for the teaching of the French language and literature will be held at Reading College, Reading, on Friday and Saturday, April 19th and 20th, under the presidency of Mr. H. J. Mackinder, Principal of the College.

The *Educational Review* has once more changed its appearance and inaugurated a change of policy. The magazine, which will in future cost one penny, is to be issued on the 8th and 22nd of each month. Mr. W. K. Hill, the late editor, will remain on the regular staff of contributors. A special characteristic of the periodical is to be a review of educational literature published in the month preceding the publication of the journal.

The Pass list for the examination in the Art, Theory and History of Teaching, recently issued by the University of London, is made up of the names of five women and one man.

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THE trouble which has arisen recently at the Royal Indian Engineering College, Coopers Hill, appeals with peculiar force to many assistant masters. Seven members of the teaching staff, including three or four of distinguished eminence in the scientific world, have received a curt notice of dismissal from the president of the college, without adequate reason being assigned. This action is ostensibly attributed to the Board of Visitors, the members of which meet once a year and confer with the president, but do not come in contact with the teaching staff. They therefore know as little of the internal affairs as the council or governors of most schools; and their recommendations are determined by the spirit of the man in authority. At Coopers Hill the professors and other teachers are not consulted by the president, who is a military officer, either as to subjects of instruction or arrangement of the time-table, but have to do as they are told without asking any questions. Most assistant-masters, unfortunately, are in much the same position, and the consequence is general dissatisfaction. The dismissed teachers at Coopers Hill have the whole world of British science behind them expressing indignation at the treatment to which they have been subjected. We trust the day is not far distant when assistant-masters in similar case will receive support and influential sympathy in like manner.

LADY LAURA RIDDING contributes an article to the *Contemporary Review* for January entitled "Women on Education Authorities." The arguments for the inclusion of women on local educational authorities are passed skilfully in review. It is difficult to imagine a person with any knowledge of educational requirements who would remain unconvinced after studying Lady Ridding's recapitulation. Fortunately it is almost universally admitted that the interests of girls' education are best served by the presence of women on the committees responsible for its management.

MR. T. L. HUMBERSTONE has a very readable article in a recent issue of *The Speaker* in which he deals with education at the Paris Exhibition. The moral of the exhibition is, we are told, definite and obvious. "We as a nation are not handicapped by want of money, or of schools, or of men, or of traditions. But we are grievously lacking in organisation—in the ability to obtain the greatest result with the least expenditure of means. We waste our money and our effort. Above all, we are given to listening to the catchwords and the empty words of arm-chair philosophers; we instigate and support educational booms."

THE Nottingham Corporation are to promote a Bill in Parliament for making better provision for education in their city. The Bill raises the whole question of the constitution and powers of local education authorities. It is proposed to dissolve the existing School Board and to transfer their property and liabilities to the City Council. A committee, constituted in a manner arranged in the Bill, would, in the event of the Bill becoming an Act, be the sole authority administering every grade of education in the city of Nottingham. All the powers and duties of the corporation and council in relation to education, except the power of raising money, would be exercised by the council through the committee. The people of Nottingham are evidently tired of waiting for the Government to tackle the thorny question of local educational authorities, and apparently hope to hurry matters on a little by these efforts of their own.

AN examination is announced to take place on March 19th next for appointments to Engineer Studentships in her Majesty's Navy. Intending candidates must make application for admittance to the examination on forms obtainable from the Secretary, Civil Service Commission, S.W., and must return them to him on or before February 15th, 1901. The limits of age are 14½ and 16½ years on May 1st, 1901. The examination, which is to be held at London, Portsmouth, Devonport, Edinburgh and Dublin, is in the ordinary subjects of a secondary school curriculum. In addition to the written examination there will be oral examinations in French and German, and practical examinations in Chemistry and Physics. Engineer students are trained for five years for service afloat as engineer officers. During these five years the parent or guardian makes an annual payment of £40. There is an increasing weekly allowance of pocket-money to each student. On appointment as engineer officers the pay is 9s. per day, with prospects of an increase to £2 per day by promotion or length of service. A fee of £1 will be required from all candidates attending the examination.

WELSH.

THE Annual Report of the examination of the schools under the Central Welsh Board has been issued. The Chief Inspector reports that on a school roll that has increased less than one per cent. there has been an increase of forty per cent. in the number of certificates gained. By the end of the current year the number of schools in permanent premises is expected to reach eighty-seven out of a total of ninety-four schools.

AN important expression of opinion is made by the Chief Inspector when he says that to place the schools on a firm and solid foundation he considers that there should be a maintenance fund which, taking the principality as a whole, should be equivalent to an average of £20 per pupil at least. He finds that a considerable number of schools have not at their disposal from all sources combined as much as £13. All the schools under the Welsh Act are intermediate and technical schools, and are expected to make adequate provision for instruction in literary, scientific and technical subjects.

THE Report goes on:—"It should be borne in mind that the salaries of teachers are capable of improvement. The enthusiasm of these early years will cool down, and some of our very best teachers will get tired of working for inadequate salaries; they will seek employment in other fields, and the frequent changes of staff that will result must inevitably disturb that continuity in the teaching which is so essential an element in sound educational progress."

THIS timely suggestion from the Chief Inspector will, it is to be hoped, receive prompt attention throughout the principality. Sound education, such as may give just occasion for national pride, cannot be cheap from the point of view of money. If the fees are low, as they are in the Welsh schools, then it is clear that a proportionately large amount of money must be forthcoming from other sources. It is clear, too, that underpaid teachers are an unsatisfactory source of economy. Either they are inefficient and the whole system suffers, or if they are efficient, then the national glory is stolen from their labour and enthusiasm.

THE Bishop of St. David's took up an important point in connection with the Welsh county schools at Fishguard and again at Llandilo. He urged very forcibly that, if parents wish to make proper and adequate use of the county schools, they must be prepared to meet the sacrifice entailed in keeping their children in those schools at least three years.

THE managers of Tasker's Endowed Girls' School have unanimously passed the following resolution in reference to a passage in the Report on their school:—"The managers desire to say they have no wish to withdraw the school from the

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Central Welsh Board Examination, but considering the great value to the pupils of Cambridge certificates, they think every opportunity should be offered them of sitting for the Cambridge Local examinations, and the managers respectfully suggest that the Central Welsh Board should facilitate this object, by assimilating the Welsh syllabus to the Cambridge syllabus."

SCOTTISH.

THE following resolutions were, after discussion, adopted by the Association of Teachers in Secondary Schools:—(1) "That the Association reaffirm their resolution of last year, viz., 'That the small percentage of passes gained by candidates in Greek in the honours grade, as compared with other subjects, cannot easily be explained on any other view than that the examination in Greek is too severe.'" (2) "That the Association welcomes the additional test in composition in the French and German papers." (3) "That the Association welcomes the introduction of group leaving certificates, and hopes that the standard of attainment will be fixed without reference to the grades of the existing Leaving Certificate examination, and shall be such as pupils may fairly be expected to pass in a group of subjects at a single examination at the close of the school course, and that deficiency in one subject should, within due limits, be compensated by excellence in another." (4) "That for the attaining of a group certificate four years' attendance at a school in which higher instruction is given should not be insisted on for the present." (5) "That in the university bursary examinations the standard of attainments and marks assigned for classical and modern languages should be equal."

THE decision in the London School Board surcharge case happily affects Scotland only in a minor degree. The dictum regarding the subordination of the Code to the law holds good north and south of the Border, but there is no complaint that the Scotch Education Department is exceeding its powers, or that School Boards are acting illegally. By the Act of 1872, a sum of money is annually granted by Parliament "for public education in Scotland," and there is no reference as in the English Act to "elementary education." The Act of 1872 further provides "that due care shall be taken that the standard of education which now exists in the public schools shall not be lowered." The parish schools were the public schools of that time, and pupils proceeded from them direct to the University. It follows that it is quite legal for the elementary public school of the present day to work up to that "standard of education" with the aid of the rates.

BUT even if any difficulty were to arise in regard to science and art teaching in Scotland, School Boards could fall back upon the *Technical Schools (Scotland) Act* of 1887. This Act has hitherto been a dead letter, but it might at any time be utilised on the initiation of a School Board. By section 3 of this Act Boards have ample powers of defraying all the expenses of a technical school or department, including the salaries of the teachers, and in fact the whole expense of a technical school may be defrayed out of the rates in the same way as in the case of an ordinary school.

THE Annual Congress of the Educational Institute was held at Dundee on January 3rd and 4th, under the presidency of Mr. Menzies, Kirriemuir. The meetings were, from many points of view, highly successful. The attendance of members was very large throughout the proceedings. The Congress programme was an exceedingly interesting and varied one, and nearly all the papers dealt with subjects of pressing moment, and reached a high standard of excellence. The discussions which followed the papers were by no means so satisfactory, and were too much confined to the same circle of speakers. While it could hardly be said that free debate was stifled, there was very evident a determination to keep the discussions on strictly formal lines. This was probably due to the desire to keep to the official time-table, but the value and interest of the proceedings were considerably lessened thereby.

THERE was an interesting conflict of opinion between the President and Mr. Weinberg, jute merchant, Dundee, who gave a valuable paper on "Commercial Education." Speaking as a practical business man, Mr. Weinberg said that Scottish schools disregard the business methods, the currencies, and the commercial resources of foreign nations; while Mr. Menzies, as becomes the rector of a school famous for its classical instruction, held that in the classics, especially Latin, was to be found an *open sesame* to all the gates of knowledge. "Commercial geography and commercial arithmetic were mere catch-words meaning nothing, but thrown as a sop to the Cerberus of the moment, the merchant. Geography and arithmetic never could be anything but commercial in the truest sense of the term. The dominant need of the time was not *commercial* training, but *intelligent* training. Lay the foundations of that, broad and deep, and well, and all the rest would be added unto them in due season." There is overwhelming evidence (*vide* the reports of our consuls and other agents abroad) in support of Mr. Weinberg's contention that our disregard of the conditions and wants of other nations is a serious handicap to us in the race for commercial supremacy. At the same time, it will be admitted that specialisation at too early an age in any sphere is certain to defeat the end aimed at. What is needed more and more in our commerce and industry is, as Mr. Menzies implies, the application of a trained intelligence to the endless problems that are constantly presenting themselves.

IRISH.

THE Irish branch of the Teachers' Guild are making efforts to obtain a measure for the Registration of Teachers in Ireland. This benefit has been placed within the reach of English teachers by the Board of Education Act, but Scottish and Irish teachers are excluded. It is hoped that a deputation from the Teachers' Guild in England, and the Irish branch, may wait upon Government to urge the extension of the English Act in this particular to Scotland and Ireland, or the introduction of a distinct measure or those countries.

AMONG Protestant teachers in Ireland there is a consensus of opinion strongly in favour of registration. The Teachers' Guild, the Association of University and Intermediate Teachers, and the Central Association of Irish Schoolmistresses have always strongly supported it, and at their annual meeting, just held, the Schoolmasters' Association passed a resolution in favour of it. There is some doubt as to the attitude of Catholic educationists. Most of these are, in Ireland, members of religious orders, and registration might prove onerous to them under certain conditions. Again, if a University degree were an essential qualification, the vexed question of the absence of a teaching university approved of by the Clergy might be raised. On the other hand, during the sitting of the Intermediate Commission, some of the Churchmen prominent in education, and many of the best Catholic teachers expressed themselves as in favour of it. Apparently their concurrence would largely depend on the nature of the measure, and the conditions necessary as a qualification for registration.

THE Schoolmasters' Association is a body which does little now to advance education—a fact, however, largely due to the present uncertain and transitory state of Irish secondary education. Nearly all the important Protestant headmasters belong

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to the Association, but its annual meeting, the only occasion on which they meet, has been dwindling to insignificance for some time. This year the meeting was held in Dublin on December 28th. The President, Mr. Fawcett, was absent, and there was no Presidential address. Dr. Biggs, Headmaster of Portoa Royal School, presided, and there were altogether only seven members present.

RESOLUTIONS were passed asking the Intermediate Board to publish their Rules and Programme for the ensuing year as early as Easter, for the convenience of schools; recommending the Board to make use of the simplification of French Syntax recently decreed by the French Minister of Education, in their examinations this year; and that the Metric System should be introduced into the Arithmetic course for the Middle and Senior Grades. Two other resolutions were also passed—one in favour of registration, and another expressing a hope that the final scheme of the Board of Agriculture and Technical Education might be framed so as to induce local authorities to encourage specialised scientific education in secondary schools. The President for 1901 is Mr. Henry M'Intosh, Headmaster of Methodist College, Belfast.

THE Examinations for Teachers, established by Trinity College, Dublin, were held on January 3rd and 4th. Three ladies presented themselves for the first examination, and passed, obtaining certificates. The examinations so far have been made use of very little by teachers.

CURRENT HISTORY.

THEY are destroying—*horribile dictu*—the walls of Avignon. That ought to interest us Englishmen. It was while the Popes were living at Avignon, and because they were thus under the control, though not within the territory, of the French kings that we passed Statutes of Provisors and Præmunire. It was owing to English wars in France that the Papacy escaped from Avignon, and in so doing brought about the great schism of the fifteenth century which acted and reacted so strangely on English and other history. The Popes began to reside there in 1308, and soon afterwards they bought it from the Count of Provence, to whom it had belonged. It was theirs till the French Revolution. In its immediate neighbourhood are Orange, whose princes are not unknown to us, and Tarascon, which, unlike its two neighbours, has become famous, though not unmentioned before, only since Alphonse Daudet wrote his famous book on Tartarin.

WHAT shall we do with the English hooligan or Australian larrikin? A newspaper correspondent, considering athletics and sport too mild an outlet for his energy, prescribes military conscription. This sets us musing of old-world ways of thinking. Prize-fighting is, we suppose, generally regarded by our readers as interesting only to the class from which hooligans are drawn. Yet we may read in respectable chroniclers of the highly respectable proceedings which inaugurated highly respectable encounters even in royal courts which, when we strip them of their "chivalrous" surroundings, appear but the exact equivalent of our prize fights. Ladies and gentlemen of the fifteenth century were utterly free from the least suspicion of anything degrading in such spectacles. Now, as we translate "prize-fight" into "wager of battle," so we may translate "hooliganism" into "private warfare." It is therefore remarkable to see the parallel between the modern proposal to suppress "hooliganism" and a mediæval proposal to stop private warfare, which was to punish the refractory private warrior by sending him to the Holy Land. If he must fight, let him fight the "good fight of faith." Our readers will also remember Dr. Arnold's treatment of Tom Brown.

BEFORE Christmas, Parliament had a session of quite Elizabethan shortness and despatch of business. It was quite primitive, too, in its *raison d'être*. The sovereign wanted money, and Parliament was called together to grant supplies, and no other subjects were even debated. "Grievances" were carefully kept out of sight, and Ireland was not represented. The days of the present Salisbury are getting curiously like those of the first. So short, indeed, was the session, that some members could not get re-elected in time to sit. How that should set us thinking historically! The Cabinet is unknown to the law; nay, we might almost say, it is illegal. It certainly was so by the original Act of Settlement which called "the illustrous House of Hanover" to the British throne. It is contrary to the spirit of many Bills from that same Act of Settlement downwards that the sovereign should be able to bribe members of the House of Commons to support his ministers by causing them to "hold offices of profit under the Crown." And, therefore, if an M.P. accepts some Government appointments he is rendered ineligible for the House of Commons, and if others, he must vacate his seat, though he is not ineligible and may stand again as a candidate. It would be an interesting study to read the Act of Settlement, its modifications in the reigns of Anne and George I., the Place Bills, abortive and successful, of the eighteenth century, with a view to what our fathers used to call an "occasional" lesson, to the VI. and V. on current politics.

ON THE USE OF MAPS IN TEACHING GEOGRAPHY.

By HUGH ROBERT MILL, D.Sc., LL.D.

THE publication of a shoal of school maps and atlases in the last few months of the nineteenth century has redeemed the history of education in this country during that epoch from the slur that lay upon it for ninety-nine years and nine months. The profusion of recent school maps, and the excellence of most of them, supply a text on which it may be permissible, and even profitable, to enlarge. We propose, therefore, to consider the use of maps in education from the geographical standpoint, feeling confident that readers of THE SCHOOL WORLD will be able to apply the various considerations to the practical work of teaching.

The first requisite of a map is to represent an actual region in such a way as to convey to the mind an idea, not absurdly inadequate, of what the region is really like. The conception of scale or relative proportion is the first essential for this purpose. To begin with, very large-scale plans of small areas should be used, and these the teacher must prepare for himself, using the school as his region and a scale of so many feet, not miles, to an inch. The natural scale of 1 : 12, or one inch to one foot, can be used for a room; of 1 : 120, or ten feet to an inch, for a playground. Beyond that the schools in some towns may procure a sheet or two of the 1 : 500 town-plan (nearly 10 feet to a mile), or at least of the 1 : 1,000 plan, *i.e.*, 5 feet to a mile. The sheet of the parish-plan of 1 : 2,500, or 25 inches to a mile, containing the school, should be in every schoolhouse in the country, and the 1 : 10,500, or 6 inches to a mile, and the familiar 1 : 63,360, or 1 inch to a mile, carry the diminution of scale down to the point where wall-maps and atlases may begin to be used.

The existence, the excellence, and the cheapness of these Government maps are not half enough insisted on in the atlases and text-books of the usual geographical publishers. The nation

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pays for the surveys, and it is fitting that this national work should be widely used in national education.

It is essential that the teacher should thoroughly know the map and the district, and to this end he cannot do better than to trace in the contour-lines on a six-inch map in pencil so as to make them more readily recognisable, and then colour the intervening spaces so as to throw the whole configuration into relief. If this work proves attractive, as in many cases it will, the teacher should proceed to do the same for one of the one-inch sheets, a task that may be very laborious. However, the new coloured issue of the one-inch map, with its bold red contours and delicate brown hill-shading, will be found sufficient in most cases, and these sheets have the additional advantage of being the best cycling maps in existence.

The gap between these large-scale maps, in which the distortion due to projection is scarcely perceptible, and the small scale maps of atlases where projection is as important as scale, may be bridged by Bartholomew's beautiful orographical map-sheets on the scale of about 1 : 125,000, or two miles to an inch. These are now nearly complete for Great Britain, and a few have been published for Ireland. They have the merit of cheapness and accuracy; but in some cases the active teacher, especially if he be a cyclist, may detect slips, or insert new features. This kind of practical map-criticism may even be pursued on the Ordnance Survey sheets, which, of course, share the objection common to all representations of living phenomena of passing out of date. The new Ordnance Survey hill-shaded maps on the scale of 1 : 250,000 approximately, or four miles to an inch, brings one almost to the limits of atlas maps, and here the intelligent teacher—whom one assumes, as our forefathers assumed the "gentle reader"—would do well to secure also the corresponding sheet of the Geological Survey map on the same scale, and then his armoury of large-scale maps will be complete. A geological map in some localities, where the surface strata are sharply contrasted, may be used in elementary teaching, although, as a rule, it is better adapted for more advanced study. The geography of the south coast of England, to take an instance, absolutely requires the aid of geology in its elucidation, and very elementary pupils in south-coast schools can recognise and appreciate the importance of the Tertiary clays forming Selsey Bill, the solid chalk of Beachy Head, the sandstones of the Hastings cliffs, and the shore gravels of Dungeness.

It is important for all places, and necessary in the schools of seaport towns, to have a few sheets of the Admiralty chart for purposes of comparison with maps. The general chart of the British Islands is a capital example of Mercator's projection for a small area, and may be profitably compared with a map on the usual modified conic projection.

The worst of map-sheets is that they rarely correspond to natural areas, and we notice with pleasure that a hill-shaded map of the basin of the Soar without names, on the scale of one inch to a mile, has been prepared by Mr. J. D. Paul, and published by Stanford for the special use of teachers in the locality. This is an example which might be profitably followed for other populous river-basins.

The value of wall-maps lies in the fact that they face the pupil at all times, and the features they represent grow as familiar to him, one would like to think, as the face of a friend. The powers of human vision vary greatly, and for some a wall-map, however boldly executed, presents little more than an outline, while others can appreciate elaborate detail. The old-fashioned wall-maps crowded with names in small type were useful mainly for reference when standing in front of them, and it may be said generally that names on a wall-map should be a minimum in number and a maximum in size of print. Wall-maps, in fact, are diagrams. British map-producers have not kept pace with those on the Continent in wall-maps, but Stanford's recently published "New Orographical Map of Europe"[1] on the scale of 1 : 4,000,000, compiled under the direction of Mr. H. J. Mackinder, is a very great step in advance. The map is of a convenient size, very clear and pleasant in colouring, and expresses, by its graduated browns and blues, the relative elevations of Europe, and the depressions of the surrounding seas, with some approach to perfection.

But the most carefully selected contour lines cannot bring out equally the features of plain, plateau and mountain over an extensive area, and on the scales adopted here the mountain systems suffer eclipse. For a wall map, where the impression must be largely pictorial, we should recommend the combination of hachuring with contour lines and tinting. The Iberian peninsula, for instance, is a poor featureless surface on this map; the grand tectonic lines of the southern ranges, including the Sierra Nevada, are scarcely suggested. The Apennines, the Balkan systems and the mountains of Asia Minor fare little better, but the lower heights of northern Europe are relatively more distinct. The orthography is usually correct, except in the case of modified vowels, which are frequently misrepresented. It is curious that in all the maps and atlases we have to notice in this article nearly the same mistakes are made, hence we may assume that the errors are not always due to oversight, as they undoubtedly are in this instance. The reader may be reminded that in the Scandinavian languages the modified vowels å, ä, ö are pronounced quite differently from the simple letters and placed by themselves at the end of the alphabet. The Swedish å is merely a contraction for the Danish *aa*, and is pronounced ō. Thus, Torneå and Åbo may correctly be written *Torneaa* and *Aabo*, but not "Tornea" or "Abo." Similarly, Malmo, Bodo, &c., should be "Malmö," "Bodö" &c. The same holds good for the German modified vowels, where, in place of the *Lubeck* and *Rugen* of Stanford's map, we should have either "Lübeck" and "Rügen," or else "Luebeck" and "Ruegen."

A new wall-map of Wales, by Messrs. George Philip & Son.[2] on the scale of 1: 200 000, combines hill-shading with elevation tinting in a satisfactory manner, and although the county boundaries somewhat obscure the general effect, the map is a good one, deserving of extensive use in the schools of Wales.

We must regretfully consider Messrs. Philip's large pictorial wall-map of the world on Mercator's projection[3] a failure. It is well printed and handsomely mounted; but though the idea of giving characteristic pictures of different regions and their products is good, the result in this case is without educational value. The contempt of scale in the drawings condemns the whole; the flying fish, the condor and the sperm whale are all of the same size; the elephant, although larger than the Rock of Gibraltar, is smaller than the ermine. The contents of a good Noah's Ark, placed appropriately on a common map laid out flat on a table, would be more useful in conveying sound ideas.

Perhaps the best of all wall-maps for class use are lantern slides specially prepared for this purpose, their chief drawback being the fact that only one can be shown at a time, and for a short time only. The old slide-map, photographed from a crowded atlas sheet and muddily coloured, was worse than useless, but, fortunately, these are now rarely met with, and really fine work is available at a small cost. For this result we are indebted to the Diagram Company, which has produced a unique set of educational slide-maps designed by Mr. B. B. Dickinson, of Rugby, and Mr. A. W. Andrews, and to be had through Messrs. Philip & Son, 32, Fleet Street. By a new

[1] Price, in four sheets, 16s.; in one sheet, 60 x 54 in., mounted on cloth, with rollers, 20s.
[2] Price 7s. 6d., mounted, on rollers.
[3] Price 20s., mounted, on rollers.

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process the colour on these slide-maps is perfectly clear and uniform, and the detail exceedingly sharp. They form only part of a system of educational maps, and merely reproduce on a large scale the features of the coloured hand-maps which are sold at one penny each and the outline hand-maps which cost only half as much. It is not so generally understood as it should be that a map is a piece of apparatus to be used, not merely a summary of information to be read. The only way of using maps is for the pupil to have them in his hand to measure, mark upon or colour, as may be required. Thus the plain outline maps, which show only coast lines, rivers and marks for the position of towns, may be used for copying the completer wall or projected maps, drawing in the watersheds, mountains, railways, political boundaries, &c. Copying features from a large map on a small map of the same projection is one of the best possible exercises in the meaning of scale.

The coloured hand-maps of the Diagram Company are about 12 inches square, and, leaving the sea white, show the land tinted in green and brown, according to carefully-selected contours. An admirable feature is that the scale of contours varies with the horizontal scale of the map, and that the same lines are not chosen for representation in all the maps. It is a mistake to suppose that uniformity of altitude scale is more important than uniformity of horizontal scale for general purposes. Thus Switzerland requires, and in the Diagram maps it receives, a different set of contour lines, to bring out its mountain features, from the British Islands. The maps indicate the sites of the most important towns by dots, but are entirely without names. They represent, in our opinion, the most important recent advance in geographical teaching appliances, and their technical execution leaves nothing to be desired. Even on the maps of Natal and the Transvaal, where five shades of brown are employed, the rivers are not obscured, and a pencil or ink mark on the darkest shade is quite legible. For the use of senior classes in teaching the distribution of such phenomena as temperature or rainful these maps are very useful; and in impressing the great features of a large country, we can imagine nothing better than to draw in the routes of the great transcontinental railways on these maps. In history teaching they should be of equal value. We can only note one imperfection in the maps as a whole, and that is the want of the natural scale (1 : x); this can, of course, be easily supplied from the scale of English miles which is given, but it would be well to add it for purposes of comparison in future issues.

While the Diagram Company's hand-maps and lantern slides supply a very valuable collection for school use, the demand for a cheap and good school atlas is not extinguished by them. Three new atlases claim these distinctions, and all, though in different degrees, exhibit the unhappy manners of their class in prefaces or advertisements in which their good qualities are set forth with a distressing want of reserve. We cannot forget that the pioneer in introducing a purely British school atlas on the excellent German model was Mr. G. G. Chisholm, who, nearly fifteen years ago, designed an extremely satisfactory school atlas on modern lines that was printed by Stanford and published by Longmans, but, unfortunately, was not cheap. It has been a truism amongst those who know the demands of the British public for atlases that good work could not compete with bad work, unless by underselling, which is impossible. The stupidity of the average teacher fifteen years ago, when he was offered fifty bad or twenty good maps for a shilling, can be gauged nicely by the relative commercial success of good and bad atlases. Now, fortunately, things are better. The efforts of the Geographical Association during the last ten years have reinforced the constant example of the geographical societies, and the average teacher is now beginning to know a good map when he sees it, and to prefer it to a bad one if it is not much dearer. This is a prodigious advance. Still, however, the average teacher will insist on having a useless sheet of astronomical diagrams prefixed to his atlas, although the figures are too small to be of any educational value, and although they refer, as a rule, to astronomy and not to geography at all.

Of the three atlases before us, "The Sphere Atlas"[1] may be dismissed with few words. Its companion advertisement styles it "the best one for schools," and claims that it is "the only atlas upon original and approved lines issued during the past century." These statements we venture to question. The atlas has certain very good points, some of which are novel, but the leading new feature—continuing the map to the edge of the paper and surrounding the central part by a white border—is not, in our opinion, an improvement, the possible advantage of continuing the map to the edge being counteracted by the ugly white break. The printing is not very distinct in some places, but although the atlas falls below the level of the other two, it is undeniably better than most of the school atlases hitherto in use.

The "London School Board Atlas," by George Philip, Jun.,[2] is a highly meritorious piece of work and remarkably low in price. It is based on the recommendations of a committee of the London School Board, and the maps have been revised by a member of the Geographical Association. There are eight pages of introductory letterpress which give some useful information, but would have been improved by the revision of a practical teacher familiar with the difficulties which geographical ideas present to the beginner. There is a careless slip in the description of Mercator's projection, where the words "shortest distance" ought to be "direct bearing," and in the list of the length of rivers the names "Jenisei" and "Jang-tse" suggest the language of the source of the statistics. The statistical diagrams are useful, but the tables of statistics strike us as of little importance for young learners.

The plates begin with a series of comparisons of maps and pictures: but the "pictures" are bird's-eye views which differ very little from the accompanying plans, and certainly do not suggest the utter inadequacy of pictures to represent relative position. On the other hand, they do convey a good idea of the meaning of a map, which is the main thing. Then follows a map of the county of London on the scale of 1 : 100,000, not distinguishing altitudes, and an excellent orographical map of south-eastern England on the scale of 1 : 1,000,000. These are special maps for use in London; then follow a page of picture and map to explain geographical terms, a miscellaneous page of astronomical diagrams and the world in hemispheres; a general Mercator map wisely duplicating the Atlantic Ocean, and then the special maps. Europe, Asia and Africa are shown in the form of a physical and a political map facing each other, the physical being a particularly successful gradation of colour tints supplemented skilfully by hill-shading, and the political showing only the most important place-names. America is not so well treated, and we think a political map of the United States would have been more valuable than one of Eastern Europe. The British Isles are well shown, though the hill-work on the political maps crowds them unnecessarily. We call attention to the attempt to show the volume of traffic by a railway map with lines corresponding in breadth to the amount of goods carried, which we think is new for this country. The West Highland Railway is omitted from this, and also from Mr. Arnold-Forster's atlas, although it appears in the "Sphere." One plate is devoted to historical charts of the British Empire, which are as successful as the scale could allow. Excellent orographical maps are given of all the countries of Europe, most of

[1] Published by the Sphere Atlas Company, Ltd. Price, complete, 56 pp., limp leatherette, 1s. 6d.; cloth, 2s.; abridged, 40 pp., 1s.

[2] Published by G. Philip & Son, 1s. Also "Atlas of Comparative Geography," an edition for Secondary Schools, 1s. and 1s. 6d.

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them on the scale of 1 : 5,000,000; and in the other parts of the world the British Empire is adequately dealt with. The whole of the map-work shows great care, and we heartily congratulate the compiler and the publishers on the good appearance of the maps, which shows that British cartographers and map-printers only need adequate encouragement to produce first-class work at a low price.

Well as Messrs. Philip have produced their atlas in England, it is, we must allow, surpassed in beauty and accuracy of colour-printing by the more expensive, though still very cheap, "London School Atlas."[1]

As a specimen of colour-printing, this atlas, which is edited by Mr. H. O. Arnold-Forster, is the finest thing ever produced or published in this country. There is an introduction describing the principles on which it is constructed, apparently identical with those dominating Philip's atlas. But the introduction tells too much of the plan and opens a loop-hole for criticism. As to the spelling of many names, it says: "there is no right way and no wrong way." With this dictum we cannot agree; there may be several right ways of spelling a place-name, there are always many wrong ones. "Bukarest" is given as a "native spelling," but is not the Rumanian form "Bucuresci"? The importance of giving *Livorno* as well as Leghorn is rightly insisted on; but why should not *Napoli*, *Torino*, *Firenze*, *Venezia* be given as well along with their dissimilar English synonyms? That sea-mapping is essentially different from land-mapping we cannot accept; the differences are merely in the accidental circumstances of methods of survey and the conventional forms of delineation. Dr. A. J. Herbertson supplies some useful notes on the construction and reading of maps, but he seems to confuse the central cylindrical projection with the arbitrary system of Mercator, to which the term "projection" cannot be applied in its geometrical meaning.

The specimens of methods of cartography and of the relation of maps to bird's-eye views are beautifully executed and admirably chosen, and the astronomical diagrams are simpler and better than usual, but the constellation of the Great Bear should not be called "Arcturus." The compass-card given in this, as in most atlases, is a weak affair, and yet there seems to be no reason why a real sea-card should not be reproduced with its 32 points instead of the 16 usually shown. The maps are admirably selected and perfectly produced, the only blemish being the adoption of a dark blue colour for shallow water and a light blue for deep water, which (although it has been experimentally tried on the Continent) is an inversion of a well-established convention, similar to painting the British possessions green or turning the south of a map to the top. It cannot be said to be wrong, but it is useless and unpleasant. The map of European Russia on the scale of 1 : 18,000,000 might have been omitted, as the fine maps of northern and southern Europe on the larger scale of 1 : 12,000,000 contain practically the whole of it.

In an atlas prepared and revised by so many excellent authorities we are surprised to find many blunders in the spelling of place-names. "Lubeck," "Abo," "Tornea," "Carlsruhe," "Lim F." are all wrong; while the transliteration of Russian names is irregular and inconsistent. *Jaroslav* and *Yurieff*, Niȷni Novgorod and Voroneżh, Pechora and Berditcheff are examples of the same letter being rendered in two different ways. The general political map of Africa has been starved in the matter of names. The patriotic pupil would look in vain for Gold Coast, Nigeria, Mombasa, Uganda, or Salisbury, for all of which there is ample room. No seaport is shown in Madagascar, and the province of Lourenço Marques goes by its ancient, if not extinct, name of Sofala.

[1] Published by the London School Atlas Company. Price, according to binding, 2s., 3s., 3s. 6d.

When errors of such magnitudes are the most serious that can be found in these atlases, the geographer may receive them with a very hearty welcome and honestly commend their use to the teacher as certain to aid in the progress of the improvement of geographical instruction.

We should like to see a shilling atlas of physical geography to accompany the maps of vertical relief and political divisions, and we fear we shall continue for some time to come to "ask for more."

RECENT HISTORICAL NOVELS.

THE most striking feature in this month's batch of historical novels is their frequent infraction of Sir Walter Scott's principle that the hero should not be a real historical character, or that, if he be, the episode treated should be one unknown to orthodox history. Practically all the eight books noticed below (except the first and the last) have real historical persons playing principal parts; and in some cases this boldness has necessitated—or, at any rate, has apparently appeared to the author to necessitate—taking considerable liberties with chronology and even with the deeper truths of history. All the books noticed, except those marked (3) and (5), are written expressly for the young. No. 3—which is generally acknowledged to be one of the "books of the year"—has been admirably reviewed at length (since this notice was written) by Mr. Frederic Harrison in the January number of the *Fortnightly Review*.

(1) H. ELRINGTON. "A Story of Ancient Wales." [174 pp; 2 ill.] (National Society.) 2s.—A slight story which is pleasing and harmless enough except on its historical side. The title itself reveals the chief weakness of the book in this respect, namely, its unnecessary and very misleading abuse of geographical names. It is not a story of Ancient "Wales," but a story of West *Britain* about 50 A.D., introducing the defeat of Caradoc and his Silurian followers by Ostorius Scapula and his subsequent betrayal by Cartismandua, Queen of the Brigantes. Similarly, the eastern part of Southern Britain is called *England*; the Silurian capital is called *Caerleon* long before it had become a camp of the Roman Legions (*Castra Legionum*); and the principal character, before he became a Christian, is named *David*. Such looseness of nomenclature is quite easy and common enough without being encouraged by the *imprimatur* of an educational body like the National Society.

(2) MARY H. DEBENHAM. "Keepers of England: A Story of a Thousand Years Ago." [284 pp; 5 ill.] (National Society.) 3s. 6d.—This excellent story is practically a contribution towards the Alfred millenary. The authoress wisely suppresses the Athelney-cum-cakes-and-harper episodes (which have been worked almost to death), and sets her story in the later years of Alfred's reign. She draws a graphic picture of the ruthless Northmen, like Hasting, and of his English vanquisher, "England's Darling."

(3) MAURICE HEWLETT. "Richard Yea-and-Nay." [429 pp.] (Macmillan.) 6s.—"Yea-and-Nay" was the nickname bestowed on Richard Lion-Heart by his friend-enemy, the troubador Bertran de Born, and Mr. Hewlett takes the nickname as the key to his analysis of Richard's character. The book falls into halves: the first, "the Book of Yea," tells of Richard's doings in the years 1189-1190; the second, "the Book of Nay," dealing at length with the Third Crusade, takes him from Messina, *via* Acre, Joppa and Austria, to the deathbed of Chaluz. As compared with Scott's two Richard romances, the story is just as indifferent to mere chronological accuracy; it is spread over a much longer period; it is less "epic" and more introspective; and it represents Richard almost exclusively as

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an Angevin ignorant of the English language and profoundly indifferent to England. Undeniably well-written and full of clever sketches of men and places, the book is, nevertheless, much less charming than Mr. Hewlett's previous work in pure romance, "The Forest Lovers." Some parents would probably think it unsuitable reading for young persons. Readers who are stimulated by Mr. Hewlett into curiosity about the "real Richard" may profitably turn to Miss Norgate's "England Under the Angevin Kings," Mr. S. Lane-Poole's "Saladin," and to Mr. T. A. Archer's works on "The Crusades" (Story of the Nations Series), and "The Crusade of Richard I." (English History from Contemporary Writers Series).

(4) GORDON STABLES. "England's Hero Prince." [378 pp.; 6 ill.] (J. F. Shaw.) 5s.—"England's Hero Prince" is the Black Prince, whose exploits from Sluys to Najara form the main subject of this book. Neither the history nor the style nor the tone strike us as admirable; but apparently the publishers and the non-educational press seem to think that Dr. Stables' works are "splendid books for boys."

(5) F. MARION CRAWFORD. "In the Palace of the King: A Love Story of Old Madrid." [363 pp.; 14 ill.] (Macmillan.) 6s.—In his "Via Crucis" Mr. Crawford gave us a number of loosely-connected scenes, taking place in various parts of Europe and Asia, in the time of the Second Crusade: his present book marks a complete change of method. The whole story deals with events taking place in a single night in the Old Moorish Palace of the Alcazar of Madrid, and it is most carefully put together. He gives us a full-length portrait of Don John of Austria worthy to stand beside his former portrait of Eleanor of Aquitaine, and his description of the social life and political methods of the Spanish court in Philip II's. days is most interesting. But there seems no reason why he should make Don John return to Madrid in November, 1570 (when he was really still in Granada), nor why he should at that time transport the Duke of Alva from the Netherlands to Spain, nor why he should make his characters speak as though Mary Stuart was still in possession of the Scots throne. These "howlers," unlike Mr. Hewlett's, have not the æsthetic justification of making the story effective, and their presence rather tends to arouse suspicion as to the truthfulness of Mr. Crawford in the more important points of his picture of one of the greatest personages in the history of the sixteenth century. In order to enhance the glory of Don John, Mr. Crawford rather blackens the not particularly good character of his half-brother, King Philip; but by so doing he, at any rate, compels one to face once more the interesting problem, "*If Don John had occupied Philip's place, what would have become of Protestantism?*"

(6) E. EVERETT-GREEN. "After Worcester: The Story of a Royal Fugitive." [429 pp; 6 ill.] (Nelson.) 5s.—The authoress tells the story of Charles's wanderings in disguise from Worcester to Brighton in 1651, ingeniously amalgamating many of the minor personages who assisted his flight into two fictitious characters. She writes with warm sympathy for the Royalist cause, while treating the adverse point of view with a gallant attempt at judicial fairness. The difficulties of travel, the contemptuous dislike of Englishmen for Scotsmen, the evil condition of prisons and the fervour of pro-Stuart loyalists are among the salient features of the historical background; and these are all things which it is well to realise when young. A map showing the route of the royal fugitive would be a valuable addition to the book.

(7) E. EVERETT-GREEN. "In Cloister and Court, or the White Flower of a Blameless Life." [341 pp; 6 ill.] (J. F. Shaw.) 5s.—A good story (in all senses of the term) centering round Bishop Ken. The first book deals with the English evacuation of Tangier in 1683-4; the second book deals with life in Wells during Monmouth's Rebellion (1685); and the subject-matter of the third is sufficiently indicated by its title, "Seven Brave Bishops." Miss Green's powers of characterisation and quick sympathies with men and beasts make her, to our mind, by far the nearest approach to "Ballantyne the Brave" among the present generation of writers for boys and girls.

(8) VARIOUS AUTHORS. "Valour and Victory." [248 pp.; 118 ill.] (J. F. Shaw.) 5s.—This volume is really made up of two books, called respectively "For England's Flag" and "For Queen and Empire," each containing ten stories by various authors (including the prolific Dr. Gordon Stables) about the present war in South Africa. The illustrations, which include six coloured prints, consist partly of portraits of British generals, and seem sometimes to be reproductions of photographs that have appeared in the illustrated papers. The sentiment and the binding are alike "patriotic."

RECENT SCHOOL BOOKS.

Classics.

Test Questions on the Latin Language. By F. W. Levander, F.R.A.S. 90 pp. (H. K. Lewis.) 2s.—These sets of questions, 68 in all, each containing about 15, will be found very useful. Those in Part I. include questions on accidence and syntax in great variety, while Part II. consists of 11 sets on etymology, orthography, the early language and dialects, prosody, and literature. The teacher will find here something ready to hand for all forms.

Cornelius Nepos. Lives of Miltiades and Epaminondas. By A. E. Roberts, M.A. 127 pp. (Rivingtons.) 1s. 6d.—This edition is intended especially for pupil teachers, to whom it will doubtless be of service in preparing for the Queen's Scholarship Examination. There are short introductions on Nepos and the subjects of the Lives: in the text long vowels are marked; the notes give grammatical hints and are short and to the point: there are useful appendices on the subjunctive mood, cases, conjunctions, &c., illustrated from the text, exercises and passages for unseen translation, and vocabulary.

Messrs. Macmillan also publish an edition of the same Lives in their "Elementary Classics Series" (xxiv.+89 pp) by G. H. Nall, M.A., at the same price. In this the notes are somewhat fuller and contain more varied information, and the vocabulary gives more help in the way of phrases, than those of the edition noticed above. Mr. Nall's work in this series is well known, and this is, like the rest, very good.

Euripides. Alcestis. By E. H. Blakeney, M.A. 180+xxxvii. pp. (Bell.) 2s.—The editor approaches his author with much sympathy. He, at any rate, will have nothing to do with the theory of many, that Euripides is no poet, but only a philosopher using the drama as the medium for the publication of naturalistic and sceptical views. He holds that "Euripides was *before all else* a poet." For this reason he rejects Dr. Verrall's improbably ingenious view of the "Alcestis," though he admits, of course, that it may have been part of "his intention to give sly digs at the monstrous legends which did duty for divinity." The text is explained by numerous stage-directions and short notes of the subject-matter of the dialogue. The annotations are full, the particles receiving careful notice, and the longer choric parts are translated. There are some supplementary notes by the Rev. S. Thelwall which might well have been placed among the author's own. Then come useful appendices and a vocabulary. The many illustrations are taken from ancient examples, and the book is altogether a pleasing specimen of the Series, calculated to interest and stimulate the learner.

Homer. Odyssey, Book VI. By E. E. Sikes, M.A. xxvii.+67 pp. (Blackwood.) 1s. 6d. It is very doubtful whether "boys

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who have already some acquaintance with Attic, though not necessarily with Epic, Greek" will be satisfied with this volume; they are so accustomed now to notes, vocabulary, &c., which save them all labour. But for more advanced students the book will be most valuable and will be thankfully used. The Introduction, however, contains much information in a summary form for the beginner on his first approach to Homer, and the first appendix presents a good introduction to Homeric grammar. The second deals in an interesting manner with the incorporation of folk-lore, often common to many different peoples, into the story of the Home-coming of the hero. The notes, as hinted above, are not spoon-meat, but are really illuminative and scholarly. The illustrations are reproductions of ancient work, and two of metal-work from Mycenae are specially interesting from their antiquity. It is a pity there is no index.

Selections from Plato. By L. L. Forman, Ph.D. lx.+510 pp. (Macmillan.) *7s. 6d.* One of the most striking features of this book is its absolute unconventionality. The whole preface is distinctly refreshing and almost disarms criticism. Here is an extract: "The editor wishes to be the first to declare that the notes here offered on Plato are by no means the kind that should be offered—that it is a 'base use' he makes of Plato, taking his words as texts for instruction on *μέντοι*, *γάρ*, prolepsis, &c." And here is the end of it: "This creature before him is not that which it was to be, not by leagues. His only consolation is that the purchaser has not wholly lost his money. For has he not 275 pages of Plato?" But even American humour may seem to go too far and to be rather out of place in a commentary on Plato, on this side of the Atlantic at any rate. We had marked several passages in the notes for quotation, but this expression of opinion may suffice. In other respects we have nothing but praise to record. The Introduction deals freshly and pleasantly with the personality of Socrates, the circumstances of his time, and the works of Plato. The selection of passages is admirably adapted to give a clear idea of the Socrates according to Plato. The text is conservative—this was not the first intention of the editor, he tells us,—the chief variations from the MSS. being five of Mr. Adam's restorations, and an equal number by the editor. The commentary is rich with varied information, and the appendix is a veritable mine of Platonic usages. There is also an index of proper names and a very copious Greek index. The instructor in Greek in Cornell University proves himself to be a Platonist of no mean order.

Edited Books.

Handbook to S. Matthew. By Canon Newbolt. 250 pp. (Rivingtons.) *2s. 6d.*—This "handbook" consists of a series of notes, and is intended primarily for the use of teachers in elementary schools. To aid this design blackboard sketches are interpolated which should be found of the greatest practical utility, and the arrangement of each lesson in accordance with the now time-honoured divisions of "matter and method" ought to make the work of giving divinity lessons almost trifling to any moderately well-trained teacher. The introduction is very brief, and the notes are clear and excellent; the cross references are almost overwhelmingly complete; and every point upon which instruction needs to be conveyed is clearly brought out. The book can hardly be called a commentary, because it most resolutely avoids every appearance of mere scholarship or of pedantry; but if some compilers of commentaries could be persuaded to make their works as clear and as useful as this volume, a great gain would accrue to students, and teachers would likewise save a great deal of valuable time; especially since (all the merely practical features of this work notwithstanding) the name of the editor is a guarantee of sound learning and discriminative doctrinal excellence.

Essays from De Quincey. By J. H. Fowler, M.A. 154 pp. (A. & C. Black.) *2s.*—Notwithstanding Professor Masson's tremendous labour of love in the cause of De Quincey's fame, it may be very gravely doubted whether, even among persons of some considerable literary accomplishments, he is by any means as well known as he deserves. A hundred will read Charles Lamb with relish, for one who can be found to take up De Quincey with tolerance, to say nothing of admiration; and so long as this is the practice of maturer minds, it is scarcely likely that De Quincey will fall into the hands of boys at school. Hence Mr. Fowler's volume almost deserves the motto of one of Victor Hugo's books. It "is not merely opportune, it is imperative;" and as it supplies every evidence of careful workmanship, of scholarly insight, and of a love for an English classic undeservedly neglected, it may be hoped that this volume will be found as widely useful as it is in every sense acceptable. From the voluminous remains of De Quincey, Mr. Fowler only selects six essays; but these are among his very best work, and in themselves are sufficiently stimulating to make healthy mental food for students who happen to have arrived at that stage of development where the merely jejune and commonplace among the ordinary school subjects in literature have ceased to possess any further attractiveness. They are above the average of the ordinary boy, perhaps, but for those who have native literary talent will be found exceptionally useful. The introductory matter, with a rare modesty in editors, is almost too brief, and the notes are conspicuously unobtrusive. Mr. Fowler evidently considers his author as of more importance than himself, and it is to be hoped that this volume will meet with such approval that even a modest editor may be constrained to give us some more of De Quincey in another volume of the same kind.

A Soldier in Christ's Army. By A. C. Champneys, M.A. 224 pp. (G. Bell & Sons.) *2s. 6d.* net.—This is a valuable manual upon the English Church Catechism and the Order for Confirmation, and if something less rhetorical could have been chosen for a title, the volume would have been not only unexceptionable, but highly praiseworthy. For boys it supplies a real want, because it is full and exhaustive without the slightest attempt at anything which might conduce to priggishness on the one hand or a merely formal understanding of the meaning of the offices of the Church of England on the other. It is a long way in advance of many manuals in common use, and can hardly fail to be read with interest and with profit even by the average schoolboy, for whom, perhaps, religious topics are rarely made attractive. The appendix, dealing mainly with the current difficulties in matters of belief, will be found of genuine worth. Altogether it is a volume of sound sense and sympathetic helpfulness.

Grammar and Composition.

A Second Manual of Composition. Designed for use in Secondary Schools. By Professor Lewis. (The Macmillan Co.) Price *4s. 6d.*—An admirable text-book for the higher forms in secondary schools. The book consists of two parts, the first treating composition in general, the second composition in its particular kinds. The plan pursued in the former is the graduated construction of five essays illustrative, respectively, of the five principles of development springing from the associations of ideas. At the end of this course the student will have to hand five essays representing his completed application of the various principles of good composition in which he will have received a gradual and thorough drill. He will have modified his outlines, his paragraphs, his sentences time after time until he cannot help but have a real grasp of the significance of composition. The only danger, and it is one which Professor Lewis recognises, and, in our opinion, not unsuccessfully com-

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bats, is the apparent monotony of this constant repetition. "There will be a constantly increasing delight in the thought of doing something in a finished fashion, to the very best of our ability." In English schools the disgracefully subordinate position essay-writing occupies will not allow of the thorough working-out of all the exercises, but the five essays should certainly be treated on the lines laid down, and many of the illustrative exercises might be worked orally. They deal with such branches of writing as—Unity of Thought, Order of Topics, Scale of Treatment, Proportion of Parts, applied generally and particularly. In Part II. the student leaves the more mechanical processes and begins to write rather with an eye to effect. Models of Narration, Description, Exposition, and Argumentation are supplied, and the leading principles underlying their construction are clearly pointed out, and exercises upon them given. Three appendices—on Grammar, Punctuation and Spelling—form a useful addition to a book that deserves to be widely used. We have not seen so suggestive and instructive a volume on this subject before.

Mathematics.

Practical Mathematics. By A. G. Cracknell, M.A., B.Sc. viii + 368 pp. (Longmans.) 3*s.* 6*d.*—Mr. Cracknell is a competent mathematician, and hence his work is free from the tiresome errors and misleading statements which so often occur in works of this kind. The book deals with a great variety of subjects, ranging from decimals to trigonometry and vector analysis; hence some of the sections are mere summaries, and their success will be in arousing interest and inducing the reader to apply himself to other books. But the chapters on graphic methods, on approximations, and on the slide rule are very good, and the work, generally, is a very favourable example of its class. On page 81 we have the problem, "Solve $2+5x-4y=4x-3y+6$," the "solution" being given as $x=y+4$: this phraseology should be amended, because it is certain to lead to confusion.

Algebra for Elementary Schools. Part II. By H. S. Hall, M.A., and R. J. Wood, B.A. iv. + 67-158 pp. (Macmillan.) 6*d.*—A continuation of the simplified "Hall and Knight"; Part I. has already been noticed in these columns. Part II. comprises simple equations, factors, L.C.M. and G.C.M., addition and subtraction of fractions, and problems leading to simple equations. These last are of very familiar types.

Science and Technology.

Magnetism and Electricity. P. L. Gray. 227 pp. (London: Methuen.) 3*s.* 6*d.*—This is a theoretical text-book containing sufficient subject-matter for the Advanced Stage of the Board of Education (South Kensington) Examination and for the London B.Sc. Pass Examination. The subject is, as a rule, treated in a clear manner. Several of the more recent discoveries receive brief but thoroughly intelligible treatment; more especially may this be said of the chapters on Electric Waves, Atmospheric Electricity, and Terrestial Magnetism. The author rightly refers (in the preface) to the importance of experimental work being done by the student, and advises that "every experiment should be repeated, as far as possible." It is, therefore, surprising that details, or even suggestions, as to the methods of conducting such experiments are almost absent. The illustrations form the weakest feature of the book. Flat diagrams are certainly more instructive for the beginner, but in a text-book these should at least have commendable neatness. The artist, in this case, should have avoided perspective views of apparatus and restricted himself to cross-section diagrams. The absence of test questions at the end of the various chapters is detrimental to the volume as a class text-book. In a section on Electrotyping we read that "Newspapers are now generally printed from cylinders, upon the surface of which the letters have been formed by the help of electrotyping." Surely this is not the case.

A Primer of Astronomy. By Sir Robert Ball, LL.D., F.R.S. viii.+183 pp. (Cambridge University Press.) 1*s.* 6*d.*—This is the first volume of a series of science primers which have been arranged by the Cambridge University Press, to be published at what Mr. Montague Tigg would call "the ridiculously low price of eighteenpence;" and it is really a marvel of cheapness. There are eleven beautiful plates, reproduced from the best pictures of celestial objects in existence, and the descriptive text is composed in Sir Robert Ball's inimitable style. In our opinion, however, many of the descriptions are too difficult for general readers to understand, and not graphic or concise enough for students. Experience in teaching the subject to beginners—and there is considerable difference between teaching and lecturing—tells us that the following points are not presented with sufficient clearness:—Fig. 4. The Celestial Sphere. A very unsatisfactory diagram, likely to mislead the beginner to think it represents the earth, and only a student familiar with geometry could understand its significance. Figs. 5, 6, and 7 are also too diagrammatic to be instructive. P. 56, the statement that a mean solar day is the average of a very great number of "intervals between two successive transits of the sun" is incorrect. At pp. 62, 99 and elsewhere, references are made to the "weights" of the moon and planets, when "masses" are meant. P. 43, the view that sunspots are "rents in the brilliant mantle [of the sun] through which we are permitted to obtain glimpses of the non-luminous interior" is misleading, and, with the other parts of the paragraph in which it occurs, ought to be revised in the light of modern solar physics. The diagrams of planetary orbits (Figs. 19 and 21) ought to be omitted if a better means of showing the orbits cannot be invented. Notwithstanding these defects, the primer contains much information admirably set out and should be possessed by everyone interested in reading about the signs and wonders of the heavens.

The Romance of the Earth. By A. W. Bickerton. 181 pp. (Swan Sonnenschein.) 2*s.* 6*d.*—Prof. Bickerton has produced an interesting sketch of what modern science has to say concerning the various stages in the evolution of the earth from what is poetically called chaos. Having briefly described the nebular hypothesis and the origin of the earth's crust, the author provides short essays on such subjects as the origin of life, the life of the body, organic ascent, and the procession of animal life. It is a little difficult to indicate the class of reader for whom the book is suitable: the language is too technical for boys and girls, while the treatment is too slight for serious students of evolution. Perhaps it will be most useful to those persons who attend university extension lectures and similar meetings, and are able to distinguish between accepted opinions and Prof. Bickerton's own views.

A School Chemistry. By John Waddell, B.Sc. (Lond.), Ph.D. (Heidelberg), D.Sc. (Edin.). xiii. + 278 pp. (New York: The Macmillan Company.) 4*s.* net.—The most important particular in which Dr. Waddell's introduction to chemistry differs from previous similar books is in the descriptions of industrial processes: these are systematically brought up to date. For instance, under the Production of Sodium. we find an account of the electrolytic method and of the process of the reduction of the hydroxide by iron and carbon. Many of the illustrations will prove familiar to British teachers of the subject. Dr. Waddell is a firm believer in the experimental method of teaching, and we are glad to find that he recommends the teacher to encourage individual experimen-

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tation on the part of his pupils. Chemical theory is introduced gradually. A chemical law is only explained after sufficient experimental data have been accumulated by the pupil to make it intelligible. It is abundantly clear throughout the volume that Dr. Waddell is an experienced teacher thoroughly conversant with the needs and limitations of the youthful student.

A Reader in Physical Geography for Beginners. By Richard E. Dodge. ix.+231 pp. (Longmans.)—Professor Dodge is already known in this country as a stimulating writer on geography, and we hope this excellent little book will increase the number of his readers very considerably. The volume is divided into some six divisions, dealing respectively with: the continents, the industries of men, the origin of land forms, the great land forms, climate, and other important physical features influencing man. A glance through the book at once reveals its American origin; the profusion of well-reproduced illustrations, the clear printing, and the quality of the paper, are all superior to what British teachers are used to. Unfortunately, so little attention is given to the study of physical geography in our schools that we are behind American teachers in our methods of imparting instruction in this really educative subject. As a means of cultivating the observing faculties and of developing the power of tracing the connection between cause and effect, physical geography can become an invaluable aid to the schoolmaster, and Professor Dodge's book should do a great deal towards making the subject more popular.

Mother Nature's Children. By Allen W. Gould. vi.+261 pp. (Boston: Ginn and Co.)—The idea of this book is to show how the instinctive acts of animals, and functions of parts of plants, can be given human significance. As in "Sandford and Merton," everything in nature is made to convey a pretty lesson, and beautiful aspects of the lives of living things are presented to view. We have little sympathy with the plan adopted, and none with such remarks as that the flowers of roses are "the baby clothes which the loving mother-plants have made to wrap their babies in. A flower is a cluster of leaves that the plant has gathered into a nest for its little baby." Or, "The grain out of which we make our flour and bread is really the food which the wise plant-mother lays up for its baby seeds." "The little creatures [Hydras] find it so much pleasanter living together than apart." We are anxious to encourage the study of nature, but do not consider it desirable to give children the habit of attributing wisdom, love and foresight and other human qualities to plants and animals. For those who like this fairy-tale method of imparting natural knowledge, the book will be found instructive.

Miscellaneous.

The Army and Navy Musical Drill. By A. Alexander. 14 pp. (Geo. Philip & Son.) 1s. net.—Mr. Alexander's latest musical drill quite maintains the high standard of former members of the series to which it belongs. The method adopted certainly goes a long way towards making physical exercises one of the most attractive of school occupations.

Free-Arm Drawing for Infants. By J. H. Stevens. (Geo. Philip & Son.) 3s. 6d.—This book contains some forty examples in coloured chalk on squared paper, with notes and illustrations. For those teachers who believe in the use of squared paper the book is a good one. Two photographs are given at the beginning indicating very clearly the position of a child when working at free-arm drawing. The apparatus seems to be a very simple one and easily fitted to a school desk. Most of the examples are very well chosen. It does not, however, seem advisable to keep very long to squared paper.

Frances Mary Buss Schools' Jubilee Record. Edited by Eleanor M. Hill, B.A., with the co-operation of Sophie Bryant, D.Sc. 171 pp. (Swan Sonnenschein.) 7s. 6d.—This book consists of the three numbers of the magazine issued in the year of Jubilee of the Frances Mary Buss Schools, founded in 1850 by the lady after whom they are named. The story of the growth of these schools is so intimately connected with the development of a system of improved education for women that a large amount of space is very appropriately given to an account of the steps by which the advantages now enjoyed by women have been secured. The very handsome volume contains a great deal of interesting material and should appeal to a much wider circle than the old students of the Frances Mary Buss Schools. The illustrations are numerous and the printing good.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Teaching of English Literature.

I have read with much interest and profit Mr. Addis's paper on the Teaching of English Literature which was printed in the January number of The School World. His methods appear to me to be good and likely to be productive of the best results. But are we not met with a difficulty at the outset—a difficulty that consists in the precise signification of the expression "a fair number of hours a week?" My estimate of the value headmasters place upon English literature may be incorrect, but judging from an experience extending over twelve years, I am strongly of the opinion that they think little of it. The number of lessons devoted to the teaching of this subject has fluctuated between 0 and 2 a week, with a distinct tendency to gravitate towards the former! Surely Mr. Addis is exaggerating when he speaks of the "lame limp" of the Classics. I have found that the Classics have lost very little of the force of their crushing tramp, and it is my belief that they still dominate the curricula of secondary schools in an overwhelming degree. Many a teacher has expressed to me his firm conviction that the intellectual capacity of a boy is only to be gauged by his ability to "do" Latin, and I should say that the majority of English headmasters still believe in the pre-eminent advantages in the way of culture that are held to accrue from a training based on, and largely composed of, Latin and Greek. (Mr. Addis himself, by the way, does not hesitate to besprinkle his paper freely with words and quotations from Latin sources.) This prejudice naturally results in the interest in English literature being "confined to a few," and it is, to say the least of it, somewhat illogical for classical teachers to complain, as they frequently do, that boys cannot write a passable piece of English. If a boy receives six lessons a week in Latin and six in English—which have to be apportioned to geography, history, grammar, dictation, essays and English literature—no wonder that "the average London day-school boy knows as much of his native literature as he does of Chinese."

E. W. Hurst.

Nonconformist Grammar School,
Bishop's Stortford.

Holiday French Courses at Caen.

Will you kindly allow me to call the attention of your readers to the Holiday Courses for Teachers which are held at the University of Caen, Normandy, during the month of

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August, with short sessions at Christmas and Easter? The number of students attending last August has shown a marked increase on August, 1899, when the courses were first established, nearly 80 students following the course, compared with 51 who attended the previous year. During the month we arranged a three days' visit to Paris, of which 30 availed themselves. For the courses in August, 1901, my committee are offering thirty scholarships, four paying full fee for morning lectures and classes, ten paying half fee and sixteen one-third of the fee. The scholarships are offered for competition, and candidates must send in names before February 15th. Subjects for an essay in French will be set, the compositions to be forwarded during the month. I shall be pleased to send conditions of the competition on receipt of a penny stamp.

There is plenty of good accommodation for visitors at Caen. The cost of living with the best families is about 40 to 45 francs a week. A month's stay at Caen, including fees, need not cost more than £10, and can be done for considerably less.

WALTER ROBINS.

9, Northbrook Road, Lee, London, S.E.

Holiday Literature.

MR. ADDIS'S article and Mr. Fearenside's letter, both in the January number of THE SCHOOL WORLD, lead me to think that some of your readers may be interested in the results of a more elaborate "plot" to "influence a child's pleasure-reading" than either of these writers suggests.

My pupils (girls) are permitted *as a treat* to read carefully selected works of "high literary merit" during the holidays. There are two sets of subjects and two examination papers, for girls over, and under, thirteen. The standard for the seniors is of necessity much lower than that of Mr. Addis's specimen paper, but I have been surprised at the amount of æsthetic appreciation generally displayed. The advantage of making the work strictly voluntary is that it is done with enthusiasm, by about half the school. In choosing subjects I aim, as a rule, at giving matter for comparison and contrast: "Westward Ho," "Kenilworth" and "The Revenge" formed one list; "Crossing the Bar" and "The Epilogue to Asolando" appeared in another; "Gray's Elegy" and "The Ancient Mariner" in a third. Hardly a girl failed to apprehend the essential characteristics of Tennyson and Browning; not one but could correctly assign unseen passages of Gray and Coleridge. But I think I cannot bring forward a better argument for "Holiday Literature" than some answers of a pupil of my sister's, a child of twelve, who had no help whatever in her preparation. The work set was Thackeray's "Rose and the Ring," Tennyson's "Day-dream," and "Crossing the Bar," which was to be learnt by heart.

Q. Explain carefully "Crossing the Bar."

A. May I die in the evening and may Death call me sharply and quickly, and may there be no great mourning when I go on the sea between Hades and earth. But may it be so quiet that it seems a sleep, and the sorrow so deep that it makes no noise, when my life which came from the boundless ocean of eternity returns from whence it came. May there be "twilight and evening bell and after that the dark," and may they who love me not take very sad farewells when I die. For although from out our present and natural place Death may take me far, I hope to see my Pilot (God) face to face when I have crost the bar between life and death.

Q. Describe the "Sleeping Beauty."

A. The Sleeping Beauty was lying on a couch, with a purple coverlet across which year after year her jet-black hair, flowing down from a braid of pearl, had grown down to her feet. The silk coverlet embroidered with stars had moulded itself to her limbs, and each softly-shadowed arm peeped through her hair, and on them were diamond bracelets. "Her constant beauty doth inform Stillness with love and day with light." Her breathing could not be heard in the palace chambers, and the lovely tresses were not moved that lay on her charmed heart. She does not dream, but lies, "A perfect form in perfect rest."

Q. Describe the scene you like best in "The Rose and the Ring."

A. The scene I like the best in the "Rose and the Ring" is where old Gruffy, after producing the paper which Giglio wrote, and which ran: "I, Giglio, promise to marry the charming Griselda Gruffanuff, widow of the late Jenkins Gruffanuff." Poor Giglio had to confess he wrote it, and so had to go to church with "dear Gruffy," as he had called her, but whom he hated now, as nothing would induce her to give up Giglio. Poor Rosalba hearing this fainted, and Giglio was forced to get into the same carriage with Gruffy as he had meant to enter with Rosalba. When they got to the door, Fairy Blackstick said, "Will you still persist in making this poor Prince unhappy?" Gruffy answered her very rudely, and ended by saying, "I shall have my husband." "Yes; you shall have your husband," said Blackstick, and so saying she touched the brass knocker, and there appeared Jenkins Gruffanuff, and called in his old fashion "Missis ain't at home." So Giglio was able to marry Rosalba after all.

In reference to Mr. Addis's recommendation of verse exercises for Sixth Form boys, I should like to mention that I have had better first attempts at blank verse from girls of fourteen than from girls of eighteen. My plan is to tell some romantic historical episode—the siege of Quebec, for instance—and let the class in reproducing it work in some half-dozen lines of verse, as if they were quotations; but I cannot do this oftener than once a term, as only the usual hour a week is allotted to Literature. My experience points to the conclusion that a genuine love of literature, and particularly the sense of rhythm and the power of reading verse aloud, can seldom be roused at a maturer age than fourteen or fifteen.

MARGARET M. MACK.

Brighton.
January 11th.

Enlightened Patriotism.

WILL you allow me through the medium of your paper to call the attention of teachers to our work in Canada?

1st.—OUR EMPIRE DAY, when once a year (at present on the day of Her Majesty's birthday) the children of the public schools in all our large towns are gathered together for patriotic exercises. These exercises consist of a varied programme. An enormous hall is profusely decorated with flags and emblems. A large choir of children's voices, trained by their teachers, and military bands supply the music. Distinguished men come to address the young people, and occasionally portraits of prominent men from various parts of the Empire are thrown upon a screen by lime-light. Last "Empire Day" in Montreal was attended by over 10,000 children with their parents.

2nd.—OUR FLAG DAY, when once a month, for an hour or so, the pupils are gathered in their respective schools for regular and systematic instruction about the Empire.

It is hardly possible to imagine what this may amount to among our young people in half a generation. In an empire so mighty and so scattered some such means of bringing the distant parts together seems desirable, and we desire to bring the subject, through your pages, under the consideration of the men and women engaged in the teaching profession in Great Britain.

There are some reasons for believing that young colonial children may be more easily interested in the other colonies and

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in the mother country than their sisters and brothers in the old land. Be that as it may, it must be admitted by all that we cannot do too much to draw out an enlightened and intelligent patriotism—the patriotism not merely of hoisting flags and beating drums, but of a warm, living and practical interest in all that belongs to the nation in every part of Her Majesty's dominions.

It will give our committee very great pleasure to secure your interest in England, and we shall be happy to be put into correspondence with teachers who would like to know more of our movement.

MARGARET POLSON MURRAY,
Hon. Sec. of the Federation of the Daughters of the British Empire.

20, McTavish Street, Montreal.
December 31st, 1900.

OUR CHESS COLUMN.

No. 26.

N.B.—In future, competitions will be open to all, irrespective of age limit.

A FIVE-SHILLING book—to be selected from the catalogues of Messrs. Macmillan and Co., Ltd.—will be awarded to the sender of the best series of six notes on the subjoined game, taken from the December number of the *Sachové Listy*.

WHITE.	BLACK.
1. P—K4.	1. P—K4.
2. P—Q4.	2. P x P.
3. Q x P.	3. Kt—QB3.
4. Q—K3.	4. P—Q3.
5. Kt—QB3.	5. B—K2.
6. B—Q2.	6. P—KB4.
7. Castles.	7. Kt—B3.
8. P—KR3.	8. P x P.
9. Kt x P.	9. Kt x Kt.
10. Q x Kt.	10. Castles.
11. B—Q3.	11. P—KKt3..
12. P—KKt4.	12. B—B3.
13. P—KB4.	13. R—K1.
14. Q—B3.	14. Kt—Q5.
15. Q—Kt3.	15. B—K3.
16. P—B5.	16. B x QRP.
17. P x P.	17. P x P.
18. P—Kt5.	18. B—R1.
19. B x P.	19. R—K7.
20. Q—R4.	20. Q—K2.
21. Q—R6.	21. R—KB1.
22. B—QB3.	22. Q—K6 ch.
23. B—Q2.	23. Q x B ch.
24. R x Q.	24. R—B8 ch.
25. R—Q1.	25. Kt—Kt6 ch.
26. P x Kt.	26. B x KtP mate.

Papers should be sent in on or before the 28th inst.

A set of Staunton Chessmen has been awarded to—

N. B. Dick,
Merchant Taylors' School,
Charterhouse Square,
E. C.,

who heads the list of points scored in our monthly competitions during the year 1900.

The games in our Inter-School Correspondence Tournament are now being continued after the holidays. There are only four schools taking part in the contest, a number which I hope to see largely increased in the future. I wish more teachers would realise what great advantages Chess possesses for their pupils. To be sure, there are signs that its progress in schools is steady, if very slow; and it is to be hoped that the day is not far distant when a London School Chess League will be *un fait accompli*. What is wanted is the active co-operation of more of the many teachers who play Chess themselves in organizing clubs in their schools. This is what a French writer has to say on the subject:—"It would be desirable if the fathers of families, the chiefs of institutions, should utilize with care the predilection of a boy for chess: because the game develops without fatigue, and in an admirable manner, and even with pleasure, the faculties of intelligence: it combines, in effect, the habit of reflection with the rectitude of judgment, and specially with the greatest motor of progress, the satisfaction of self-love. Men devoted to the education of youth, meditate on these observations; they emanate from a person experienced in the career of teaching, and who has reaped its blessings."

I see that a grand tournament to inaugurate the new century has been arranged by the "Pillsbury" National Correspondence Chess Association. The Western States are playing the Eastern, with 150 players a side. There will probably also take place an International Tournament—the competitors being America, England, Germany, Austria.

It is too early yet to predict the result of the Correspondence match that is taking place between the North and South of England—50 players a side, but the latter has had decidedly the better of it so far. At the time of going to press the scores are North 7, South 8.

Mr. Blackburne (who, I believe, is to take part in the forthcoming Monte Carlo Tournament) has been giving exhibitions of simultaneous and blindfold play recently. A short time before Christmas he played against 25 members of the City of London Chess Club. Five of the games were drawn; the single player won the rest.

The "Tournament" which took place at Simpson's Divan, Dec. 10-19 resulted as follows:—Teichmann 3; Lee 2½; Van Vliet 2; Muller 2; Mortimer ½.

A very successful gathering of nearly 400 members was the result of Captain Beaumont's invitation to Surrey Chess players to spend the afternoon of Jan. 5th at the Crystal Palace. Sixty-four players took part in the Rapid Transit Tournament; Mr. Blackburne played blindfold against 6 opponents, his score being 3 wins, 2 draws, 1 loss; Mr. Curnock also played 4 blindfold games, and Mr. Hoffer 24 simultaneously.

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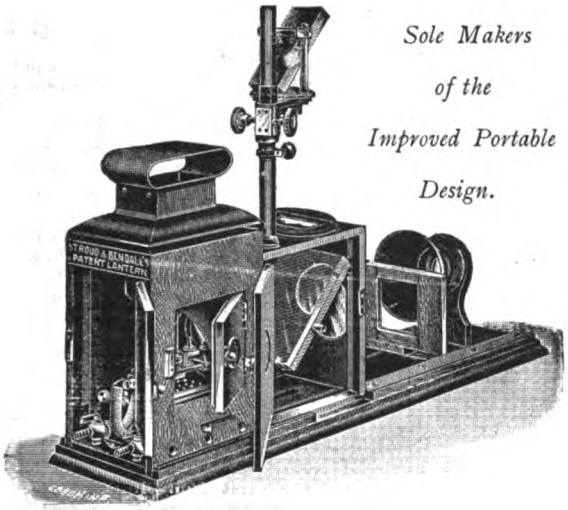

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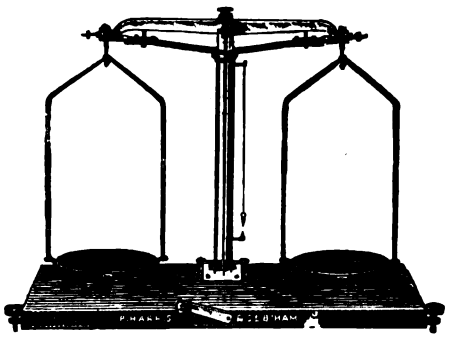

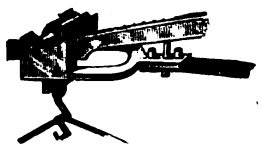

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COMMON EXAMINATION ERRORS.

IV.—FRENCH.

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IT is rather difficult at the present time to write an article on common mistakes in French examinations. When the French Ministry last July took the bull by the horns and issued their statesmanlike Edict of Tolerance for the numerous peccadilloes and petty offences in orthography and syntax that the grammatical casuists of the seventeenth and eighteenth centuries had managed to introduce into the code which governs the correct writing and spelling of French, the reform was greeted with enthusiam by the primary teachers of the country, and their joy found an echo in every land where French is taught. But the Ministry seem to have reckoned without those literary Pharisees, so numerous in France, to whom every jot and tittle, be it but a hyphen or an apostrophe, is as precious as the language itself. The Academy has intervened, and the Decree has been withdrawn.

In no country was the decree welcomed with greater delight than in England. For years the papers set in our public examinations, with certain exceptions, have been crowded with many of these Chinese puzzles, so dear to the old-fashioned type of examiners who, knowing neither the real difficulties of candidates, whether "small or great," nor what was veritably essential to a working knowledge of French, were fond of setting these hair-splitting problems, which would test the knowledge of an average *bachelier*. To English teachers the ministerial decree reads like a general proscription of the unhappy entanglements that it was once lawful, and indeed usual, to set for the luckless candidates in modern languages whom the old-fashioned examiner looked on as so many *feræ naturæ* that it was his bounden duty to entrap and ensnare.

But the present suspension, for practically it is a suspension, of these numerous rules lands us in a worse plight than when they were in full vigour and rigour. What are teachers to teach and examiners to set? Probably the best thing for the latter would be to look on all these grammatical *broussailles et épines* as a sort of "*chasse défendue*" and eschew setting any question that bears on them. Unfortunately, however, there are certain points affected by the decree which will be always turning up in practice, as, for instance, the agreement of the past participles. In the present article it certainly seems best to leave all these thorny points in abeyance, especially as many of them are such as should only be set for the most advanced students.

Besides, there are many amongst us who believe there are other and better methods of learning a language than by commencing to master the exceptions, which the older type of examiner seemed to presume to be the correct way. We are in favour of setting typical rather than catch questions, unless the latter are of every-day occurrence in the language. Anyone who has had a spell of teaching is well aware that the pupil of fourteen knows so little, and one would rather try to find out what he does know than what he doesn't know. The latter at best is but a negative test; and then again, one is certain, *a priori*, that his ignorance far surpasses his knowledge, and that examinations, in so far as they tend to the learning of mere tips, of things useful in examination, but not in real life, are not to be encouraged.

Perhaps, however, the most difficult point connected with the discussion of common mistakes in examinations, and an attempt to give hints about them, is that it is impossible in the nature of things that a really satisfactory examination paper can be framed to suit more than one form of teaching; whereas at the present time there are at least two distinct methods of teaching in the field, not to mention the numerous sub-varieties. Considering that the great majority of teaching is still on the orthodox semi-classical lines, it is clear that the papers set must be principally framed to fit in with that form of instruction. But the fact remains that many of the mistakes that a pupil brought up on the direct method would make are not those which one under classical training would be likely to commit, and *vice versa*. Take, for instance, the common confusion made by French people and phonetically-taught children between *quand* and *quant*. The Latin-taught pupil having always *quantum* and *quando* before his eyes will, even in a piece of dictation,

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come forearmed to the fray, and except from weariness or carelessness, against which there is no protection, except previous training, will not make the blunder. Perhaps it might, therefore, be worth while for those teachers, who are in favour of having their pupils examined as far as possible in accordance with the fashion in which they are taught, to approach such bodies as the Oxford and Cambridge Syndicates, and obtain from them consent to setting alternative papers wholly in French for those being taught on the lines of the *méthode directe*. It would, of course, be at once argued that there would be a danger in setting up two standards in French for the same examination. But examiners are probably gifted with a sufficient *quantum* of common sense to be presumed capable of approximating the papers in difficulty, and surely the problem cannot be anything like so arduous as to equalise the standards in the papers of two such disparate subjects as Spanish and Shorthand.

The present discussion must therefore perforce be mainly confined to mistakes which occur in the classical and orthodox method of teaching, and though the new reform has left in abeyance many well-worn scholastic "*nuces et cruces*," there is still the whole language to draw on, so that in fact the supplies of error are practically inexhaustible. *Qui embrasse trop, étreint mal*, and criticism will therefore be chiefly confined to examinations for pupils between the ages of twelve and fifteen; and even here, again, one must pick and choose. Anyone who has been a teacher knows that to compile anything approaching to a complete list of even typical mistakes would be to annotate the whole grammar and write a big-sized composition book into the bargain. One can say there is not a word in any grammar over which a teacher of experience has not found some pupil or other "bogle." In vain grammarians laudably strive to hedge in the road to knowledge with rules; the teacher, however good a drover he is, knows his flock are always liable to find a gap somewhere, or make one, if there is not; and therefore, to teachers preparing for examinations, the first counsel is, mark the places in your grammars where you have noticed that your flock have previously shown tendencies to go astray; score with double lines those passages where veritable stampedes into error have occurred, for the "*triste lupus*" mania is not confined to the classics, and we have all had experience at times of forms afflicted with grammatical dementia. Take the pupils, if necessary, over and over again through these till there is no fear of a panic, and, better still, when taking them over for the first time, use all your pastoral skill to prevent them going wrong, for first impressions are all-important.

For the pupils themselves, there are two general directions which are so simple that they are far too often widely neglected (*experto crede*). The first is (we all know it by heart) to read the questions over carefully. It is astounding to see the number of marks lost (more especially by boys) through disregard of this simple rule. Questions are wrongly numbered, which does not improve the examiner's stock of good-will; the French words given are spelt wrong. A different answer to that required is given, some children going so far as to attempt to turn masculine nouns into feminine adjectives, under the idea that feminine adjectives are required, or—and this is not an isolated case—they essay to conjugate a noun as if it were a verb, which reminds one of the old "ice-cream, thou screamest, &c." More venial and more common are the failings of those candidates who set down the meaning or the gender when asked for the plural. But the most fruitful source of error lies in the giving the wrong persons and tenses—not to mention such work of supererogation as laboriously writing out the whole tense when but one person is desired. French tenses, it must be admitted, are often badly named, but this only renders it incumbent on the teacher, in the first case, to be certain that moods and tenses do not bother the senses of his pupils. As things are, at least one pupil in every ten confuses the *passé défini* with the *passé indéfini*; while that somewhat rare tense, the *passé antérieur*, is sometimes incorrectly given by one in four, and even less. A still more serious fault that comes under this rubric is that of about three or four per cent. of the candidates who neglect to read the directions placed at the head of the alternative portions of the paper, with the result that they do part of one section and part of another. The examiner can only correct the two fragments, leaving it to *Vehmgericht* at headquarters to decide which piece shall count in the pupil's marks, the first attempted or that which obtains the highest marks; but in most cases the candidate loses a substantial balance of marks that he sometimes can ill afford to lose.

The second rule is equally simple and equally important—"Always read over what you have written." To begin with, its observance would probably have prevented two evidently sorely distracted children in a recent examination putting Algebra at the top of the French paper. Its most essential value is that it saves a vast amount of spelling mistakes not only in English, in which the penalties are either very limited or null, but in French, when they naturally all score. In some of the boys' papers a year ago in one of the big public examinations, the number of these "extras" which might have been saved, to use a cricketing metaphor, was really exasperating. Many candidates of the scamp-and-scamper type had clearly taken the paper at full speed, with the result that at times a third and even half the words were misspelt, either from ignorance or carelessness. Reading over their paper would not only have saved a large percentage of marks to the candidates, but, what is still more important, it would have prevented a goodly number from being ploughed. One could not help feeling sorry at the time for the masters of those boys who, if they had only set down properly what they knew, would not have brought disgrace on their teachers. Phonetically educated children have also special need of employing this means of

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precaution. Another form of mistake that reading over would correct is that which, by a sort of process of mental inversion, leads the examinee to write down the French word instead of the English in the translation paper, and in a large examination cases always occur in the grammar paper in which the pupil sets down the English instead of the French. A similar form of error that would benefit from the same revision is that of the child who is unable to keep the various languages he is learning in water-tight compartments, with the result that he sometimes lapses into German, and still more often into Latin, especially in cases where the French and Latin are more or less alike. The examiner who, in a French paper for a classical school, asks for the French equivalent of "3,000 men," is sure to gather in a certain amount of "*tres*" *mille hommes* or *homines*. *Venit* for *vint* is also likely to crop up pretty frequently. But the most common spelling mistakes of all are those which resemble one another in form, but are not identical in the two languages. Thus not a few candidates will write "*novelle*" for "*nouvelle*," while words, like *mariage*, *appartement*, *adresse*, and the numerous verbal traps which end in *ant* or *ance* in one language and *ent* and *ence* in the other are sure to cause the downfall of the careless equally well as the arrantly careless —two types of delinquents which may be roughly defined as those who sometimes deviate into error, and those who sometimes deviate into correctness.

High cultivation implies keeping the land very clean, and every teacher knows that sound scholarship or even knowledge implies the eradication of a good number of mistakes of the commoner sort, and the teacher who will not condescend to do a proper amount of "weeding" in his form because he looks on it as mere drudgery is sure to be punished by the crop of blunders his pupils will produce when the examination harvest is gathered in. The veriest tiro begins by learning that *à les* is a monstrosity, but it is not unknown in the work of pupils who have been doing French for a year or two, especially if they have not been exercised conversationally. Every duffer knows, when he is hauled up and made to think, that *ayant*, and not *avant*, is the present participle of *avoir*, and yet it is a certain "booby trap" with a form of anything like average size. Misrenderings in such common everyday phrases as "in England," "come and see," "what a noise," "a tea-cup," "what sort of weather is it?" "to pay for a hat," &c., &c., or confusion between *où* and *ou*, *quoi que* and *quoique*, and the different meanings of *bien* or *tout*, will in some schools, especially when French has not the *prestige* it deserves, go on turning up day after day in class till the teacher fancies he is ploughing the sands. We cannot demand for boys infallibility, but we have a right to establish a low standard of attention and attentiveness and punish all who fall below the minimum. The best way to eradicate these tares of idleness is to put up on the blackboard the corrected form of these mistakes; to set the mistake itself on the board would be only to imprint it on the boy's mind. The teacher can pitch on the form he considers best, either giving the English and its French equivalent, as he is *a* poet = "*il est poète*," or, if he wishes to avoid English, hitting on an antithesis if possible, as *il est poète, mais c'est un poète*. The "deadly sins" thus accorded the honour of the "*affiche*" should not exceed four or five a week. *Festina lente* must be the teacher's motto. These should then be consigned to the boy's notebook on a page specially reserved for these "literary felonies," or copied into the blank page at the end of his grammar if he has no notebook. Those who can draw may be encouraged to produce fancy cards (designs subject to the master's censorship) for inscribing on them the sentences of the penal code whose shibboleth is "thou shalt," and not "thou shalt not.' Other ways of engraving the contents of these phylacteries on the memory of the boys is to invent some small *memoria technica*. Take, for instance, the feminine of *grec* and *turc*. As a teacher, I could never be certain that my form would not give me away in the first public examination they entered for, till I hit on the innocent "tag" that there was more sea about Greece than Turkey. Henceforth the mere pleasure of recalling this diminutive jokelet was sufficient to safeguard 90 per cent. of the class against an unusually inveterate error.

The sex of *arbre* and *fleur*, two of the commonest words in French, is always being outraged by the small boy; but if he belongs to a Latin school and knows his gender rhymes—which he generally does, if he knows anything,—he is acquainted with the gender of *flos* and *arbor*. Tell him the genders are reversed in French, and the tag, though not perfect, will be found a help. If the teacher does not make the tale of punishable errors mount up too fast, and if he will not shrink from putting into it the commonest mistakes, just those things that any schoolboy might be reasonably expected to know, he will reduce by a very appreciable amount the number of marks thrown away in examinations by his class for no other reason than for that want of thoroughness which it is the teacher's function to develop.

But it is not enough to stamp out the worst offences by punitive means; it is also essential to take precautions against other "general" misdemeanours of the class. I use the word "general" on purpose, because anyone who has taught or examined will readily admit that there is a regular curve of error which enables one after a time to single out and specify the generic mistakes. To safeguard against these, teachers may start, in addition to the register for more serious crimes which might be called the *Index Expurgatorius* on the *lucus a non lucendo* principle, a second list of more venial offences, *as* they come across them, and make the class take them down in the note-books, or at least underscore them in their grammars. These will, of course, tend to become numerous, but teachers can easily adopt some system of classification. Those who believe in learning phrases and not words will incase the particular difficulty in a

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short sentence, because they fancy that, thus coated, it is easier to swallow and better to digest; others who hold to inter-translation will give the English alongside of its French equivalent. One plan might be to list these memoranda under the following different headings:—

(1) List of words with same meaning in English and French, but spelt differently as *resentment* and *ressentiment*.

(2) List of words in the two languages which resemble but do no translate one another, as *preparations* (ordinary meaning) and *préparation*; or a more general, and therefore better, heading might be lists of English words liable to be mistranslated into French, as *expectation*, which must be rendered by *attente*.

(3) List of words in French more or less alike in appearance but differing in meaning, as *somme* (nap) and *somme* (sum).

(4) List of words alike in sound but spelt differently, as *pain* and *pin*.

(5) List of synonyms.

(6) List of pairs of words which, having but one meaning in English, can be confused in French, as *nombre* and *numéro*. Here phrases are very essential.

(7) List of idiomatic expressions, such as *par jour* (a day), or regular phrases like *il l'a échappée belle*, the latter to be grouped under words where possible. Thus, *j'ai beau dire*, when it turned up, would be entered alongside the former; and other sub-divisions may be made.

(8) List of proverbs.

(9) List of verbs that take (*a*) no preposition, (*b*) or *de*, (*c*) or *à*, (*d*) or other preposition.

(10) List of adjectives which take a proposition; in three classes, those with *à*, those with *de*, and those with others.

(11) List of expressions made up of verbs and substantives without the article, as *rendre justice*.

(12) List of grammatical difficulties given, if possible, in antithesis, *i.e.*, the plural of *clou* is *clous*, but of *chou* is *choux* (or in French words).

(13) Words of irregular pronunciation, as *spahis*.

But whatever system is adopted, there will have to be a lot of downright hard learning by heart. Grammar is only the frame-work of the language, the more or less empty *cadres*. Those who wish to possess it must have a big vocabulary. The old grammarians were right when they tried to exhaust the list of exceptions. The mischief comes in when the beginner is at once confronted with all these irregularities. They should therefore be collected by the pupil himself out of the reading-book, and not "dug out" of grammars. In this way the boy will do his own botanising in the language, and form a verbal "herbarium" which, though incomplete, will be far more real to him than the most exhaustive of grammars, which too often remind one of those pretentious botanical collections which, instead of being confined to the flora of the school district, are choked up with specimens of the plants of every possible clime.

(*To be continued.*)

A MODERN-LANGUAGE MASTER'S LIBRARY OF FRENCH AND GERMAN.

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ANY specialist in modern foreign languages is, of course, aware that it is well nigh impossible to embody in a short article even the most important works with which a thoroughly competent teacher of French and German should be acquainted. It would of necessity embrace not only a list of books treating of the many departments belonging to the living language, but also many of those which bear upon the historical and philological side of the subject; for no modern-language master can be regarded as properly equipped for his task unless he has made himself thoroughly familiar with the vernacular he professes to teach, with the great masterpieces of literature to the appreciation of which his teaching is to pave the way, and with the main features of historical development which enables him to make his pupils understand many apparent anomalies and difficulties in the modern tongue, and, moreover, gives him the means of developing a real sense for grammatical forms and for the essence of language and linguistic growth.

The time has not come in this country when an adequate number of Englishmen are thus fitted out, for otherwise the present article would be unnecessary; and until it does come it may be well to use every available means of attracting good scholars from Germany and France and to endeavour to keep as many of them as are found efficient. To delegate to them part of the important work which the nation has a right to demand from modern-language teachers will be as wise a policy as it is short-sighted and foolish to raise at the present time a clamour against the employment of foreign teachers. The argument that Germany and France appoint natives *only* is entirely fallacious, because those countries possess a sufficient number of their own subjects who are equipped in the manner described to supply the demand; moreover, teachers in Germany and France are members of the Civil Service, to which foreigners, of course, cannot be admitted. If Oxford and Cambridge men, and Frenchmen of culture who have made a special study of their respective languages, could be appointed as modern-language masters in German secondary schools, and could be attracted to accept positions in them, there can be no doubt that many of them would be found an acquisition which could not fail to raise the standard of modern languages in German schools still higher than it is already. And the same would, of course, apply to France and other countries.

This digression from the real point at issue in this article will help to clear the ground on which I propose to operate at the invitation of the editors. It is not for the small number of accomplished teachers of modern languages who have been prepared at Cambridge or elsewhere,

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but to the numerous men and women who, though they have studied mainly other subjects, yet are desirous of taking up modern language work with a view of teaching French and German in the near future, that this article may serve as a guide. It may be assumed that the tyro to whom I propose to give some help is not entirely unacquainted with these languages, but that he is ignorant of the books which will best serve his purpose. I take it also for granted that he cannot afford to take regular lessons with a competent teacher or spend a couple of years abroad. For the sake of convenience it may be advisable to take one language after the other, and it is, perhaps, not out of place to say at once that a stay in France and Germany in the holidays will be essential, because the efficiency of a modern-language teacher will be considerably enhanced by familiarity with the country, the institutions, manners and customs of the people whose language he is going to teach.

To begin, then, with French. I should first of all recommend the study of French pronunciation, which can be best pursued by a scientific study of the sounds which a Frenchman utters with such astounding facility and unfailing accuracy, but which are a stumbling-block to foreigners if they do not proceed in the right way to acquire them. Even twenty years' residence in France does not necessarily convey a proper appreciation of the peculiarities of French sounds, if the student follows for this part of his task the pernicious and fallacious rule that a good pronunciation can be "picked up" by a short stay abroad. This rule holds good only if it is applied to young children, whose faculty of imitation is extraordinary. Grown-up people can *learn* how to pronounce *not* by mere imitation, but by a careful study of phonetics.

Take Prof. Vietor's "Kleine Phonetik," which Prof. Rippmann has excellently adapted and translated ("ELEMENTS OF PHONETICS," Dent and Co., 2s. 6d.), and join the Association phonétique, which publishes its monthly organ, "LE MAÎTRE PHONÉTIQUE," under the able direction of Dr. Paul Passy (20, Rue de la Madeleine, Bourg-la-Reine, Seine). This publication is admirably suited for beginners, and with a few hours' help from a competent teacher the student will derive the greatest benefit from it. The annual subscription as *membre adhérent* is 3 f. 50 per annum, which includes the supply of the "Maître Phonétique" appearing on the 15th of each month, except during the summer holidays.

Having once become familiar with the elements of phonetics, and being imbued with the importance of the study of phonetics for the acquisition and appreciation of a good pronunciation, as well as for the purposes of teaching it, the student may wish for more, and in that case he should take up the following works[1]:—Beyer-Passy, "Elementarbuch des gesprochenen Französisch" (Köthen, 1893, 2s. 6d.); P. Passy, "Sons du Français," 5th ed. (Paris, 1899, 1s. 3d.); "Français parlé," by the same (2s.); Beyer, "Französische Phonetik" (Köthen, 1893, 3s.); Vietor, "Elemente der Phonetik des Deutschen, Englischen und Französischen," 3rd. ed. (Leipzig, 1894, about 5s.); Trautmann, "Die Sprachlaute im allgemeinen und die Laute des Englischen Französischen und Deutschen im besondern" (Leipzig, 1884-1886, about 5s.); Sievers, "Grundzüge der Phonetik," 4. Aufl. (Leipzig, 1893); Klinghardt, "Artikulations-und Hörübungen" (1897, about 5s. 6d.). There is also an excellent article written in German by Paul Passy in vol. i. of the "Phonetische Studien" on the sounds of French. Finally, attention may be directed to the experimental phonetics of Abbé Rousselot. Anyone who has become acquainted with the works mentioned will need no further guidance. A useful bibliography will be found in Breymann's "Phonetische Literatur" (1876-1895, München, 1897), a small volume costing about 2s.).

The number of Modern French Grammars for students published in England is not great, but some of the School Grammars will serve a young master perhaps just as well. Among them I should call special attention to "PELLISSIER'S FRENCH ACCIDENCE AND SYNTAX" (Longmans, 3s. 6d. each); especially the latter will be found a careful piece of work suitable for English teachers. The "Student's French Grammar," by Charles Heron Wall (6s.) deserves to be more generally known than it is. Eve and Baudiss' "Wellington College French Grammar" (4s.) is a well-known book of a more elementary kind. Of grammars written in French there are hundreds which are useful, but none, as far as I know, that are excellent; however, CLÉDAT'S "GRAMMAIRE RAISONNÉE," 5th ed. (Paris, 1896, about 3s.) is a book apart which should be read. Proceeding at once to works on historical French grammar, there is foremost in my mind Arsène Darmesteter's "Cours de Grammaire Historique de la Langue Française," of which we have now an authorised English edition by A. Hartog (London, 1899, 12s. 6d.). "Schwan-Behrens" is excellent, but more advanced (price 5s. 6d.). Several books on more elementary lines have recently appeared in English which deserve mention. Those known to me are: "Historical Primer of French Phonetics and Inflection," by Margaret S. Brittain (Oxford, 1900, about 2s. 6d.), which is intended to serve as a historical primer, introductory to Brachet-Toynbee: "Historical Grammar of the French Language" (Oxford, 1896, 7s. 6d.). A. T. Baker's "Outlines of French Historical Grammar" (London, 1899, 3s.) is a most useful little book for beginners, and E. Weekley's "Primer of Historical French Grammar" (London, 1900, about 2/-) contains a very good outline with an additional chapter on metre.

Of French publications on this subject Brunot's "Précis de Grammaire Historique" (Paris, 1894, about 5s.), and Clédat's "Nouvelle Grammaire Historique" (Paris, 1889, about 3s.) will not be

[1] I have quoted in this article the editions of books on my own shelves, and have given the prices as nearly as I can from memory. In some cases there may be more recent editions, though I think that I have the latest of the most important works.

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found wanting.[1] A teacher studying any one of these works will wish at the same time to familiarise himself with some specimens of the old language.

Though I cherish an old love for the "Chrestomathie de l'ancien Français," by Karl Bartsch, which was twenty or thirty years ago almost the only trustworthy work, and is still to be warmly recommended, I fancy that a young English teacher would prefer the "Chrestomathie de l'ancien Français" (ix.-xv. *siècles*), by L. Constans (Paris, 1890, about 6s.), or Toynbee's "Specimens of Old French" (Clarendon Press, 16s.). Anyone inclined to take up Provençal cannot, I think, do better than take up Bartsch's "Chrestomathie Provençal accompagnée d'une Grammaire et d'un Glossaire," 4th ed. (Elberfeld, 1880, about 5s.), though there may be now other and more elementary books on the subject with which I am not acquainted.

Among works treating of the various periods of the language and literature, nothing better can be found for the middle ages than "La Littérature Française au Moyen Age (xi.-xiv. *siècle*), 2nd ed. (Paris, 1890, 3s. 3d.), and "La Poésie du Moyen Age," par Gaston, (Paris, 2nd ed. Paris, 1887), and for the sixteenth century than Darmesteter-Hatzfeld's "Le Seizième Siècle en France, Tableau de la littérature et de la langue suivi de morceaux en prose et en vers choisis dans les principaux écrivains de cette époque," 4th ed. (Paris, 1889, about 6s.). Along with it may be recommended Brachet's "Morceaux choisis du xvi^e siècle accompagnés d'une grammaire et d'un dictionnaire de la langue du xvi^e siècle, 3rd ed. (Paris, 1875, about 3s.).

For the seventeenth and eighteenth centuries the best guides are to be found in two German works: F. Lotheisen, "Geschichte der Französischen Literatur im xvii. Jahrhundert," and Hettner, "Die Französische Literatur des xviii. Jahrhunderts." However, these would be too voluminous for a novice; to him I should recommend a manual like Ploetz, "Manuel de la Littérature Française," which contains the lives of the great authors, an appreciation of their works and good specimens of the seventeenth to nineteenth centuries; there is also an edition in which the lives are in English. A similar work is "Select Specimens of the Great French Writers in the 17th, 18th, and 19th Centuries," with literary appreciations by the most eminent French critics, edited by Eugène Fasnacht (London, 1894, 7s. 6d.). There are a number of very good books of this type published in France, of which I should mention Demogeot, "Textes Classiques de la Littérature Française," 2 vols.; vol. i. "Moyen Age, sixteenth and seventeenth centuries; vol. ii., eighteenth and nineteenth centuries (Paris, 1886, 2s. 6d. each), and "Etudes Littéraires sur les Classiques Français de Gustave Merlet, Revues et Continuées par Eugène Lintilhac," 2 vols. (Paris, 1894, 3s. 3d. each).

For the nineteenth century "Le Mouvement Littéraire au xix^e Siècle," by Georges Pellissier, is indispensable; 2nd ed. (Paris, 1890, 3s. 3d.).

As a general history of French literature Gustave Lanson's "Histoire de la Littérature Française," 4th edition (Paris, 1896, about 6s.) will probably be most useful. At the same time, Brunetière's "Manuel de l'Histoire de la Littérature Française" cannot be too highly recommended (Paris, 1898, about 6s.). To those who prefer a brief account written in English, "A Short History of French Literature," by Kastner and Atkins (London, 1900), about 4s., may be recommended. Brunetière's "Etudes Critiques," 5 vols., 3s. 3d. each, "L'Évolution des Genres," 1 vol., 3s. 3d., "Le Roman Naturaliste," 1 vol., 3s. 3d., and "L'Évolution de la poésie lyrique en France au xix^e Siècle," 2 vols. at 3s. 3d. each, along with Jules Lemaître's "Les Contemporains," half-a-dozen vols. at 3s. 3d. each; further, Edmond Scherer's "Études sur la Littérature Contemporaine," in 9 vols. at 3s. 3d. each (Paris, 1889), and Emile Faguet's "XIX^e Siècle," are works which no student of modern French literature can pass by. I have made no mention of editions of the great masterpieces, and there is hardly any need to do so, because Brunetière's "Manuel" gives in its "Sources," I think, well nigh all that a teacher may want. However, I may mention for the oldest documents "Les plus Anciens Monuments de la Langue Française (with a facsimile) by E. Koschwitz (Heilbronn, 1886, about 1s. 6d.), or "Die Ältesten Französischen Sprachdenkmäler, genauer Abdruck und Bibliographie besorgt," von. E. Stengel (Marburg, 1888, about 2s.), or "Altfranzösisches Übungsbuch," von W. Foerster and E. Koschwitz, Part I., 3s. Also Gaston Paris' edition of "La vie de Saint Alexis," about 2s.; "Extraits de la Chanson de Roland, publiés avec une introduction littéraire, des observations grammaticales, des Notes et un Glossaire Complet," par Gaston, Paris, 4th edition (Paris, 1893, about 1s. 6d.); Léon Gautièr's "Chanson de Roland," texte critique, traduction et commentaire, grammaire et glossaire, 19th ed. (Tours, 1890, about 4s.), should be mentioned on account of its modern French translation facing the old French text, otherwise Kölbing's edition, which is an exact copy of the Venetian MS., iv. (Heilbronn, 1877); and Foerster's editions in the "Altfranzösische Bibliothek," 15 vols. (Reisland, Leipzig), also the publications of the Société des anciens textes, are more scholarly. A neat little edition of "Aucassin et Nicolette," mit Paradigmen und Glossar, by H. Suchier, 4th edition (Paderborn, 1899, 2s. 6d.), may be of special interest to English readers.

For Prosody Spencer's "Primer of French Verse" (Cambridge, 1899, about 5s.), along with Berthon's "Specimens of Modern French Verse" (London, 1899, 2s. 6d.), and Tobler's "Vom französischen Versban alter und neuer Zeit"

[1] The greater works of Diez, "Grammatik der Romanischen Sprachen," of which there is a French translation, with his "Wörterbuch der Romanischen Sprachen," and Meyer Lübke's new great work, of which there is also a French edition in 3 vols. (about £1 each), belong to the sphere of the specialist, but will be found invaluable by teachers who wish to pursue their studies further.

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(Leipzig, 1880, about 3s.) are all that are needed. Quicherat's "Traité de Versification française" (Paris, 1850, about 6s.) may be likewise consulted with advantage.

Among the numerous editions of modern French masterpieces of the classical period may be mentioned the scholarly EDITIONS BY DR. BRAUNHOLTZ in the Pitt Press Series:—"Corneille," "Polyeucte," 2s.; "Molière," "Les Précieuses ridicules," 2s.; "Le Misanthrope," 2s. 6d.; "L'Avare," 2s. 6d.; "Racine," "Les Plaideurs," 2s.; and the neat little edition of Prof. Spencer's "Molière," "Le Bourgeois Gentilhomme."

A student of French who has taken up the works printed in capitals will have no difficulty in selecting the works of modern authors which he should read. I must not even attempt to make a short selection for him, since it would probably not answer my purpose, and would certainly be far too long for insertion in THE SCHOOL WORLD. However, a good dictionary is an indispensable implement, yet it is not so easy to quote one. "A DICTIONARY OF THE FRENCH AND ENGLISH LANGUAGES," BY E. E. A. GASC, is one which I think will be found suitable (London, 1897, 12s. 6d.). Along with it the little "Larousse" (Paris, about 3s. 6d.) will be a help, but the student will soon have to invest in one of the larger works, such as the small "Littré," 17f.; or better still, the large "Littré," in 4 vols. and supplement, which costs about £5; or the new "Dictionary," by Hatzfeld, Darmesteter and Thomas (Paris, Delagrave), which has recently been finished, the price of which is about 25s.

As regards Pedagogy, "QUICK'S ESSAYS ON EDUCATIONAL REFORMERS" (London, 1900, about 5s.) will give the student an idea of the History of Education. Then Laurie's "Lectures on Language and Linguistic Method" (Edinburgh, 1893, about 3s. 6d.); SPENCER'S "CHAPTERS ON THE AIMS AND PRACTICE OF TEACHING" (Cambridge, 1897, about 5s.); "Didaktik und Methodik des französischen Unterrichts," von W. Münch (München, 1895, about 4s.); "Zur Förderung des französischen Unterrichts," by the same; Breul's "The Teaching of Modern Foreign Languages," about 2s., and Miss Brebner's "The Method of Teaching Modern Languages in Germany," 2s., will be read with advantage.

For the study of idioms I can recommend Payen-Payne's "French Idioms and Proverbs," with English equivalents (London, 1900, 3s. 6d.). Macmillan's "Selection of French Idioms," by Madame Plan, with explanation in French (London, 1896, 3s. 6d.); Mariette's "French and English Idioms and Proverbs, with critical and historical Notes" (London, 1896, in 3 vols.); and Storm's "Dialogues," a systematic introduction to spoken French, of which an English edition has been prepared by George Macdonald (London, 1892, 2s. 6d.), are the best books of their kind I know.

For a first study of French history, Charlotte M. Yonge's "History of France" (London, Macmillan, 3s. 6d.) and the "Student's France" (London, 1898, John Murray, 7s. 6d.) cannot fail to supply what is required by those who are not specialists.

In conclusion, I should like to direct the attention of teachers to Sweet's excellent work, "The Practical Study of Languages" (London, 1899, about 6s.); and those who wish to go a little further afield may like to read "How to learn Philology," by R. H. Miles (London, 1869, about 6s.), which should induce them to attack Brugmann's "Grundriss der Vergleichenden Grammatik der Indogermanischen Sprachen," of which there exists also an English translation.

Isaac Taylor's "Origin of the Aryans" (London, 1899, about 3s. 6d.), Jespersen's "Progress in Language" (London, 1894, about 6s.), and Geiger, "Der Ursprung der Sprache" (Stuttgart, 1878, about 4s.), are books of intense interest to any serious student of language; and Gröber's "Grundriss der romanischen Philologie," which is still in progress of publication, cannot fail to show the teacher of French that the study of Romance Languages and Philology is quite enough to occupy a whole man during his whole life.

(To be continued.)

A MODERN LANGUAGE AS AN ALTERNATIVE TO A CLASSICAL LANGUAGE AT THE UNIVERSITIES.

By E. L. MILNER-BARRY, M.A.
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AT the recent meeting of the Modern Language Association at Liverpool, a resolution to the effect that one modern language should be accepted as an alternative for one classical language in all University First Public Examinations was passed unanimously, and we hope for the reopening of the Greek question in a short time. Nine years ago a Grace to appoint a syndicate to consider what alternatives, if any, should be accepted for a classical language in the Previous Examination at Cambridge was rejected by a large majority. What will be the fate of the present movement? Let us at least hope that a patient hearing may be given to the case.

Let no alarmists startle us with the hackneyed cries, "The Church in Danger," "Abolition of Greek," "The Universities to be turned into Technical Schools." No attack is being directed against Greek; in some respects, indeed, the study of Greek has something to gain from the acceptance of the reform under discussion. Surely the cause of Greek would be furthered if a little more care were exercised in the selection of those allowed to study the language if it were asked originally, how far is the study of Greek going to profit such and such a boy? or perhaps better, is the study of Greek going to have the slightest effect on the intellectual development of such and such a boy? If not, let some other educative medium be found. Modern-language masters in this country are far too indebted to the study of

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Greek and far too liberal-minded, let us hope, to attack under a plea of utility a well-head of English culture and English thought; but they do ask this question, ought not the balance of our educational system to be re-adjusted? Would it not be in the interests of true education if the modicum of Greek which is now required at some of the Universities, and which nearly all educationists agree in condemning as being absolutely valueless as a mental gymnastic, could be exchanged for a language—not quite so remote—but the scholarly acquirement of which we believe to afford none the less a valuable training for the intellect?

Let one classical language be compulsory, but in the interests of a wider scholarship let leave be given to substitute a modern language for the second classical language. The Humanists taught two languages—Greek and Latin, yet we must bear in mind that Latin was the vehicle of intercommunication and intercourse between scholars, and as such was a living language. Four centuries later we teach the same two languages, forgetful that Latin is now a dead language, forgetful of the gigantic changes in social conditions and wants which these four centuries have brought forth.

We admit the claims of Latin as the training-ground of the intellect. In this country, at any rate, no substitute of equal value has been found; and though it must be conceded that remarkable educational results have been achieved in schools on the Continent where Latin forms no part of the curriculum, in this country the output of the modern side, from the literary point of view, has not as yet called forth the admiration of the public, nor can it ever hope to win the slightest serious consideration until the theory is exploded that, if a boy fails hopelessly in his attempt to master the classical languages, kindly nature has as a compensation endowed him with the *open sesame* of modern tongues.

Surely the retention of Latin as the groundwork of an educational system should satisfy those who clamour loudest about the mental gymnastic of the classics. In how few cases is the study of Greek carried so far that it leaves an indelible impress on a boy's mind? And this is especially true of many boys whose mental capacities win them scholarships at the older Universities. Ignorant of Greek when they obtain their scholarships in Mathematics, Science, History, Modern Languages, a crib and a coach supply the modicum of the language in a few months, and in far less time than it has taken them to acquire it, this mere smattering passes to the limbo of the unknown. Surely the retention of compulsory Greek under such circumstances is a direct bribe to superficial education. The number of those proceeding to the Universities who are practically ignorant of Greek increases year by year, and will continue to do so with the ever-increasing competition for entrance scholarships. If the study of Greek is of such vital importance for the higher education of this country, then surely the interests of true education will be better served by increasing the scope and standard of the examination in this language than by a blind adherence to the present solemn farce—at a time when circumstances have combined to give us an opportunity of estimating impartially our system of secondary education. Let the Consultative Committee on Education direct their attention to this matter and collect expert evidence on the subject.

But the retention of Greek, so far as it affects the Universities, is perhaps the smaller question at issue. What would be the gain to our educational system at large if the Universities would move along the lines indicated? First and foremost would be the enormous impetus given to modern-language teaching in this country. So long as no concession is made or option allowed by the Universities, so long will the modern side of public schools be the haven of refuge for the less gifted, so long will our modern-language teaching fail to do itself justice.

The Universities set the fashion in public-school education; let us do them the justice to recognise that they are not capricious, that though a detail is occasionally changed, broad outlines, main principles, last for generations. So it comes that the classical side of our schools is the main avenue by which the Universities are approached, and the classical side imprints the hall-mark of our school education. Given the concession that a modern language might be substituted for a classical language in the First Public Examinations of the Universities, it is easy to forecast a new order of things. Probably the half of those who now visit the Universities would be trained on Latin and one or two modern languages, and one modern language, at any rate, would be sure to receive scholarly treatment in schools, provided that the Universities would insist—and surely in their own interests they would do so—that the examination in the modern language should reach a reasonably advanced standard—a standard which should include the rendering of a passage of an English author into the modern language. Again, a logical consequence of this step would be that a large number of boys would naturally study modern languages at the Universities, and thus we could ultimately hope to increase largely the number of our native academically trained modern-language teachers, the supply of whom is at present so lamentably deficient. An increased demand for the subject would ensure an adequate supply of teachers, and we should in this way make another step forward by diminishing the number of men who are now told off, sorely against their will, to teach modern languages when classics or mathematics do not claim their attention during certain periods of the school time-table.

The greatest gain to the subject would be the enhanced reputation attaching to this new semi-modern side. It would draw off from the classical side many boys who are now classical only in the sense that they are intended for the Universities. We do not apprehend that the Greek classes will suffer in quality, and the modern-language master will rejoice in getting a fair proportion of boys whom

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he may stimulate to real exertion, and to whom he may teach modern languages not merely as a practical and utilitarian subject, but as an instrument of mental culture and scholarly training. How far Latin *plus* French and German would compare as an intellectual stock-in-trade with Latin and Greek *plus* French or German for the average boy for whom we legislate cannot be adequately represented; but we hold that the superior educative value of the second group cannot be of such a startling character as to justify the withholding of the experiment which we advocate. It is obviously futile to attempt to equate in terms of mental culture the exact value of such and such a school subject, such and such an Honours School, such and such a Tripos. We hold that for a certain type of boy the suggested curriculum is good in itself; that in it the interests of education, as apart from utility, are safeguarded, and that this curriculum may be readily turned to practical account—a factor which need not be overlooked, even though it excite the ire of those who hold that "the highest qualities of our Universities should be their *uselessness*."[1] We contend for this new curriculum, not to the exclusion of any existing one, but as one which is entitled to take its place in every phase of our system of secondary education, and we appeal to our classical colleagues to join hands with us to help to bring about this reform.

If it is carried into execution, in our opinion classical studies in this country will in no wise suffer; their *prestige* is unimpaired, their vigour undisputed, their dignity upheld. Surely those on whom the mantle of the Humanists has fallen should be the last to oppose a plea for liberty for a newer learning—a plea which is made in no spirit of antagonism to the classical languages, but in the light of ever-increasing knowledge and wider sympathies.

When the poet Heine was taking his walks abroad close to the university town of Göttingen, he overheard the following remark from the lips of a schoolboy, "Mit dem Theodor will ich gar nicht mehr umgehen, er ist ein Lumpenkerl, denn gestern wusste er nicht mal wie der Genitiv von *mensa* heiszt," and from these words he draws sundry morals about the pedantry of the University, the "hochgelahrte Georgia Augusta." This is the spirit against which we have to contend, but it is a spirit which is yielding ground everywhere. In recent years in no country in Europe has educational progress been so striking as in Prussia, and in the recent Imperial edict which places the three types of Prussian secondary schools on a footing of equality (sind der Erziehung zur allgemeinen Geistesbildung als gleichwerthig anzusehen),[2] a more modern and more liberal educational system has won its freedom. We have seen Prussia pass from an age of blood and iron to an age of brain and commerce. That age is as yet in its infancy, but it possesses a deeper meaning for the inhabitants of these islands, and one which we should do well to note betimes. We stand at the beginning of a new century, and the present decade must see the solution of many educational problems in this country; surely among them not the least important is the attitude of the Universities towards the development of modern-language study.

[1] *Blackwood's Magazine*, Feb., 1901: "Musings without Method."
[2] *Deutscher Reichsanzeiger*, Dec. 1, 1900, and THE SCHOOL WORLD, Jan., 1901.

MODERN LANGUAGES: WHY, WHEN, AND HOW?

By WALTER RIPPMANN, M.A.

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THE indirect benefits resulting from the great struggle in which we are engaged will doubtless be far greater than the direct advantages; and certainly a most hopeful symptom is the interest in educational matters which appears to be spreading even among those who are not engaged in teaching. Conferences of educational associations now receive tolerably full reports in the best daily papers, not only in educational journals; and the Man in the Street is beginning to be impressed, and to cry quite emphatically, that we must have "more education," and that we are being "beaten by brains."

To anyone who has been watching the place which Modern Languages have occupied of late years in the educational system of this country, and the methods which have been employed in language teaching generally, the recent correspondence in the columns of *The Times* could not fail to be instructive, as well as—incidentally—amusing. It may be helpful to put in a concise form the main questions at issue, which, in a newspaper correspondence, are necessarily scattered, and often obscured.

I may point out that in these letters no one seems to have paid sufficient regard to the claims of the Mother Tongue. It is unfortunate that we do not usually include it among Modern Languages; as it is not a "Classical" language either, it is often neglected altogether in the discussion of language study.

In the early stages of a child's education, the Mother Tongue must be the centre; and it should retain the place of honour even in later years when the time devoted to it has to be considerably shortened.

Through the neglect of the Mother Tongue, our children are as a rule not as well prepared to grapple with another language as they might be; this does not seem to be generally realised.

A child who is taught his own language according to sound principles will acquire:—

(1) A certain power of observation and of drawing inferences from the facts observed; and

(2) Some skill in expressing ideas. There is a close connection between the two; ideas cannot be well expressed if they are not the outcome of

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clear thinking. Too often the teacher gives everything ready-made, and the child has no opportunity of thinking for itself and talking in its own way; while in the later stages of school work, the task of teaching English style falls to the teacher of foreign languages.

(3) A certain amount of ear-training. The idea that "English children have no aptitude for languages" is largely based on the difficulties of pronunciation presented by French and—in a less degree—German; and these difficulties are the direct result of not starting from the spoken language in the teaching of the Mother Tongue.

(4) A knowledge of the elements of grammar. It is too often assumed that the English language is unsuitable for acquiring this knowledge. It must be conceded that there are many points of syntax beyond the capacity of a child; the *elements* of grammar can and should be gathered from the Mother Tongue.

If we now approach the question of Modern Languages *versus* Classics, it will clear the ground if we at once admit that a good knowledge of Modern Languages *plus* Classics is the ideal. It may be maintained with some reason that even where it is intended that a pupil shall study the Classics very thoroughly, it is best to study Modern Languages first. The space at my disposal prevents me from discussing this fully; I can only say that it seems to be most in accordance with the natural development of the child to teach languages in the following order.[1] (An interval of two years is supposed to elapse in each case before the next language is begun; and the new language is to be studied intensively.)

First, the Mother Tongue; next, German, because—

(*a*) The life and ways, and the mode of thought of the German child are most closely akin to those of the English child.

(*b*) The form of the language is nearest to that of the English child (1) in sound (note that the spelling is largely "phonetic"); (2) in vocabulary (the majority of the common words which make up the vocabulary of a child of 8 or 9 are of Teutonic origin, and have related forms in German).

(*c*) The language, being distinctly more inflectional than English, serves to extend the knowledge of grammar (mental discipline).

Then French, because—

(*a*) The life and ways, &c., are modern, and therefore in many details similar to those of the English child; at the same time the history of France has many points of contact with that of England, which can be dwelt upon with profit.

(*b*) The form of the language is modern, and, above all, the vocabulary is now easier to acquire (the majority of the additions to the English vocabulary during the previous two years, say from 8 to 10, are of Romance origin, and have related forms in French).

(*c*) After the ear-training afforded by good teaching in the Mother Tongue, and the exercising of the ear and the organs of speech in connection with German, the rather difficult pronunciation of French will present far fewer obstacles.

After two years of French, the pupil will have acquired a natural interest in the nation from which the French are descended, and the language from which theirs is derived; he will be in a better position to approach Latin (the construction of which is not "modern"), as his reasoning powers have been developed and can be utilised, and it is no longer necessary to appeal so much to the imagination. An intensive study of Latin for two years will now produce results superior to those attained at present by the long-drawn, painful drudgery of the Junior School, and it may be followed by Greek, if the school life of the pupil is long enough.

But, as a rule, it is not long enough. Our pupils do not all obtain classical scholarships, or even stay on until they are 19; there are many who choose other careers, and leave school at 16 or 17. What is the best course for them?

It is maintained by some that the study of the Classics is invaluable—

(1) As a mental discipline. But it may be inferred, from the suggestions made above, that the discipline is too severe at the stage at which the child is usually subjected to it, owing to the absence of any suitable transition from the Mother Tongue to Latin, and the consequent strain on the child. It is not true that the Mother Tongue and Modern Languages may not also be made valuable instruments for mental discipline. It is, indeed, a question of the method employed much more than of the language selected. If you have not taught your pupils to think for themselves in English, they will not think for themselves in Latin.

(2) As an instrument of culture. But is there not rather too much talk about "culture?" And what is the "culture" of the average boy on leaving school? I do not mean the sixth-form boy who has specialised in Classics; but, for instance, the boy who is going into business, or intends to be a doctor. What lessons do such boys learn from Caesar or Virgil which they could not learn equally well from the pages of a modern writer?

On the other hand, the study of French and German in some respects has an importance which the Classics cannot claim. A knowledge of German and French enables us to understand the two great nations with which we are constantly brought into contact; it opens up two literatures in which almost every aspect of our own life is represented, and therefore far more complex and advanced than the literatures of Greece and Rome; it is essential to the commercial man. Particularly the neglect of German is a grave defect of the present system.

[1] It will, of course, be understood that this is not an "Order of Merit." Thus it is generally allowed that Greek literature is far superior to Roman; but for all that, there is no likelihood of our substituting Greek for Latin, where only one classical language is learnt.

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If, then, we recognise the great importance of Modern Languages for the coming generations, and that the existing state of things is anything but satisfactory, what is the remedy?

It must be realised that the teaching of the lowest classes is not the easiest, and is certainly the most important. It is here that the art of teaching is put to the severest test. Too often it is said that "anyone is good enough for the beginners."

The Mother Tongue must be made the centre of early education, and must be well taught.

German and French must have a different place in the curriculum. As was suggested above, the order in which languages are usually taught is not good.

The methods of teaching these languages must be carefully examined, the main consideration being that we are *teaching a living language to a living child*. We ought not indiscriminately to employ the same methods as may have been shown by experience to be suitable in the case of Latin and Greek. We ought not to teach a child in the same way as a grown-up man: in dealing with the young we must appeal to the imagination more than to the reasoning powers, and we must utilise the imitative tendency which the child possesses in a marked degree.

It is the chief merit of the "reformers" that they have realised the importance of this; and they have at least made this clear, that at the very outset great care must be given to the pronunciation, one of the reasons why the foreign language should be used in class as much as possible; that the ideas presented to the child must be well within its own sphere of interest, the concrete coming before the abstract, and the broadly human before what is peculiar to the foreign nation; and that the teacher's object should be not merely to give his pupils a fair command of the spoken and written language, as well as incidentally a certain amount of training in thought, but also an appreciation of the moral and intellectual progress of a great nation.

There must be an adequate supply of efficient teachers. To produce it is the work of the Universities; they must furnish such knowledge as is not only a basis for the researches of the scholar, but also an integral part of the Modern Language teacher's equipment. The teacher will further have to spend some time abroad; and he should have an opportunity of gaining travelling scholarships, to be offered by county councils, chambers of commerce, and similar bodies. In the foreign country, the future teacher will study the life and ways, and acquire skill in the conversational use of the language, in a manner quite impossible at home; and he will be able to see good foreign teachers at work, and to observe what principles guide them, and how far they are skilled to adapt themselves to the particular conditions of their school, knowledge which is necessary, and yet so often lacking. A servile imitation of foreign methods is bad; but is haughty disdain better?

The conditions in which the English teacher is placed are not altogether favourable. He is hampered very often by the parent, who either takes no interest in educational questions at all, and thinks his duty is done when he has paid the cheque for the new term's fees; or considers educational questions from what he thinks himself justified in calling a "practical" point of view, according to which the result of education is the attainment of a certain market value.

It is this idea which has led to the distressing increase in the number and influence of examinations, the thorn in the teachers' side; and the slight importance attached to Modern Languages in most of them, as well as the antiquated way in which many are conducted, has done great harm to the proper study and the due estimation of German, and in a less degree French.

Whatever we do in our endeavour to improve methods, let us avoid the fatal extreme of sacrificing everything to commercial considerations. Let us sincerely strive not so much to teach facts as to develop the reasoning powers and to broaden the sympathies. Let Modern Languages come before Classics, not because of their bread-and-butter value (though we must not underrate that), but because we can make them powerful means of exercising and cultivating the minds of the men and women who are to work and struggle in the dawning century.

MACAULAY'S AND JOHNSON'S "MILTON."[1]

By J. A. NICKLIN, B.A.
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A COMPARISON.

JOHNSON'S "Life of Milton" and Macaulay's Essay were alike occasional in their origin. The "Lives" were contributed to a collection of English poets issued by London booksellers. The "Essay on Milton," in the *Edinburgh Review*, was suggested by the publication (1825) of Milton's "De Doctrina Christiana," which was discovered in the State Office (1823). This is not a solitary point of resemblance in the work of the two critics.

Both were characterised by the preponderance of common sense. Both were inclined to look at questions of literature and politics from what might be described as a Philistine point of view. Macaulay, however, was imbued with the same literary traditions as prevail to-day, while Johnson's standards were essentially and militantly of the eighteenth century. Both, though entirely honest in intention, were swayed by violent prejudices. Both had strongly-marked mannerisms of style. Macaulay wrote in a manner which is as effective as ever. Johnson, though really not more artificial than Macaulay, often seems to us not only quaint and archaic, but unnatural. In these differences induced by environment, this

[1] One of the set subjects for the English Literature paper (First Year) of the Certificate Examination in 1901 of the Board of Education.

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racial impress of temperament, and in the fundamental antithesis of spiritual nature which underlies both differences and similarity, we have a stimulating and suggestive theme for study.

Macaulay's "Milton."

Macaulay's Essay, written at the beginning of his literary career, has all the qualities of his maturest work. It consists of two parts; an appreciation of "Paradise Lost," and a defence of Milton's political tenets. In later years Macaulay was disinclined to indulge in literary criticisms. He believed that it was not his *forte*, which lay in political narrative and discussion. Here he was wrong. The limitations which hampered him as a critic were no less operative in other departments.

He begins his critique by demolishing the position that the poet derives advantage from the increase of knowledge. He maintains, on the contrary, that with the advance of civilisation poetry almost necessarily declines. In this contention he shows a want of insight into the nature of that poetical movement which had distinguished the opening years of his century. His canons of taste, his principles of selection, were ours. He was capable of enjoying that outburst of colour, melody and romance which had startled the belated disciples of an effete and frigid art. But he could not enter into the ideas which animated and directed the movement. He did not see that, while a narrative of pure action springs more easily from a rude state of society—while it is easier for a Homer to compose an Iliad than for a Tennyson to compose an Arthur-cycle—the mind of civilised man is still evolving more and more complex states of feeling, in relation to itself and to external nature, and thus offering to the poet a perpetually enlarging field.

As might be expected from this beginning, the appreciation of "Paradise Lost" is almost entirely superficial. It is always ingenious; within its limits, it is just. The most striking point in it is an unconscious anticipation of the "symbolism" which has figured so prominently in recent French poetry:—

> The poetry of Milton differs from that of Dante, as the hieroglyphics of Egypt differed from the picture-writing of Mexico. . . . [The images] of Milton have a signification which is often discernible only to the initiated. Their value depends less on what they directly represent than on what they remotely suggest.

On the whole, we may say that Macaulay has combated some false judgments with success, and has pronounced a verdict which commends itself as eminently sane, but he has elicited no hidden meaning, and has taught us nothing of the secret of his author.

This is a deficiency which is felt yet more strongly in the second part of the Essay. Macaulay's own words describe the want which urges itself upon our notice:—

> We shall not argue . . . on general grounds. We shall not recur to those primary principles.

And again—

> We have throughout abstained from appealing to first principles. We will not appeal to them now.

He treated the subjects which he discussed as if they were pieces in a game. He marshals his arguments for the abolition of restrictions on liberty, with absolute indifference to the nature of the thing itself. The arguments would seem as effective if for liberty he had substituted an algebraical formula. It has been said that a people should only be given liberty when they are fit to use it:—

> The maxim is worthy of the fool in the old story who resolved not to go into the water till he had learnt to swim.

It has been maintained that too large a measure of freedom may throw a people off its balance:—

> The natives of wine countries are generally sober. In climates where wine is a rarity intemperance abounds.

Macaulay's mind saw every subject as a series of *pros* and *cons*. He never applied that philosophic analysis which detects the root of truth from which conflicting antitheses branch. He thinks in, as it has been expressed, water-tight compartments; he never sees the subtle inter-dependencies and inter-connections which present themselves to a deep thinker. Thus, in dealing with the history of Toleration, he simplifies it in a fashion which has no basis in reality. There is one party in history always on the side of Liberty and Toleration; another always on the side of oppression and persecution. He refuses to see that on the one side were to be found views as diverse as those of Laud and those of Jeremy Taylor; on the other side, views as diverse as those of Cromwell and Milton and those of the Westminster Divines. He does not trouble to inquire how fragmentary glimpses of a conception in time come to coalesce. He does not trouble to estimate the effect of circumstances in crystallising indeterminate notions: how Cromwell was led to a wider conception of Tolerance by the invaluable services of Anabaptist troopers, and the outcry of the Presbyterians at "Tetrachordon" brought Milton to see that "new presbyter" was "but old priest writ large."

Macaulay's style perfectly expresses his intellectual characteristics. It was invariably and pre-eminently clear. One cause of an involved style—as Mill has noted in the case of Bentham—is the desire to be scrupulously fair: not to present any statement without immediately accompanying it with the necessary qualification. To be invariably clear is to be often misleading. Macaulay never joined a qualification with a statement. If he qualified, it was only—after presenting a fact in its most emphatic form—in the paradoxical guise of an antithesis. It is thus that he writes of Charles' execution:—

> We censure the chiefs of the army for not yielding to the popular opinion; but we cannot censure Milton for wishing to change that opinion. The very feeling which would have restrained us from committing the act would have led us, after it had been committed, to defend it against the ravings of servility and superstition. For the sake of public liberty, we wish that

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the thing had not been done, while the people disapproved of it. But, for the sake of public liberty, we should also have wished the people to approve of it when done.

For Macaulay's purposes there was nothing else so suitable as the quick succession of short sentences, the trick of which he learnt from Voltaire :

The King can do no wrong. If so, James was as innocent as Charles could have been. The minister only ought to be responsible for the acts of the Sovereign. If so, why not impeach Jefferies and retain James? The person of a king is sacred. Was the person of James considered sacred at the Boyne?

The intense concreteness of his manner adds much to its animation. He wishes to bring home to us the fickleness of many of the English politicians of the times of the Rebellion and Restoration. He does it by a number of familiar but effective allusions, heaped one upon another :—

England abounded with . . . politicians who . . . kissed the hand of the King in 1640, and spat in his face in 1649; who shouted with equal glee when Cromwell was inaugurated in Westminster Hall, and when he was dug up to be hung at Tyburn; who dined on calves' heads, or stuck up oak-branches, as circumstances altered, without the slightest shame or repugnance.

Macaulay had also a feeling for what was dignified and majestic in literature, as well as for the picturesque. That he could be impressive as well as animated appears in his picture of the Puritans.

Apart from purely literary qualities, Macaulay's immense vogue is best explained by the studied directness of his argument, which tends to keep his audience equally passive and interested, and a habit, which he shares with Mr. Kipling, of laying down rules of conduct with the assumption that they will be endorsed by all men of experience.

JOHNSON'S "LIFE OF MILTON."

Johnson was much more subject to the limitations of his age than Macaulay. While Macaulay had the advantage of coming after the Romantic revival, Johnson was a bigoted adherent to classical tradition, even for the eighteenth century. He could not endure Gray or Sterne or Macpherson's "Ossian." He was always ready to parade his Tory prejudices, while Macaulay wrapt himself in a decent pretence of impartiality. There is at least a presumption in favour of Macaulay's view of Cromwell and Milton. Johnson was more than a Tory, he was a fanatic, a Jacobite. Macaulay's literary judgments—however superficial his criticism—are for the most part in accordance with the best opinions of to-day. Johnson has often uttered absurd *dicta*, such as those on Milton's early poems.

Johnson had given his allegiance almost entirely to that body of literary tradition which was popularly supposed to be Aristotelian, but which in reality had been framed, for the most part, by Italian scholars like Scaliger. With this went, in England, a belief that the most perfect form of verse was the heroic couplet, as reformed by Waller, and perfected by Dryden and Pope. One of the characteristics of Pope's school was that it avoided particularities, and tried to express everything in general terms of paraphrase. Johnson's strictures on Milton's early poems are prompted (1) by a dislike of other metres than the decasyllabic line; (2) by a suspicion of epithets like "timbrelled," "mooned," "twice-battered," as violations of the language, and of words like "grisly," "harbinger," "y-cleped," "envermeil," as too archaic; (3) by a conviction that smoothness of rhythm and obviousness of rhyme were the chief ornaments of verse—these requirements being offended against (*a*) in the freedom with which Milton varied accent and stress, (*b*) in such rhymes as "eyn" and "twine," "stable" and "serviceable"; (4) by the feeling that such particularities as "the furnace blue," "simply chatting in a rustic row," "silken primrose," "snow-soft chair," "wormy bed," were beneath the dignity of poetry.

In dealing with "Paradise Lost," Johnson was restrained from captious strictures by a sense of its intellectual power, sympathy with its subject, and regard for the consecration of traditional reverence. Nor was he so likely to be offended by those archaic quaintnesses of diction with which a conscious imitation of Spenser had studded the early poems. And while he expected all rhymed verse to approximate to the monotonous tinkle of Pope's couplet, he allowed more license to blank verse as being outside the purview of metrical law. He feels himself bound to employ, in the examination of the poem, the stereotyped formulæ of "classical" criticism. He apportions his inquiry under such heads as "the manners," "the probable and the marvellous," "sentiments," "episodes" and "similes." Is the unity of action preserved? Has the poem—here the critics were really following Aristotle—a proper beginning, middle and end? Is there a virtuous and successful hero? These methods seem to us pedantic and profitless. Johnson himself sometimes brushed them aside with scorn. Some of his observations have retained their validity:—

[Milton] had considered creation in its whole extent.

He had accustomed his imagination to unrestrained indulgence, and his conceptions, therefore, were extensive. The characteristic quality of his poem is sublimity.

[Milton recognised as peculiarly his own] the power of displaying the vast, illuminating the splendid, enforcing the awful, darkening the gloomy, and aggravating the dreadful.

Milton's delight was to sport in the wide regions of possibility; reality was a scene too narrow for his mind.

With entirely praiseworthy justice and perspicacity, Johnson fixes on the illimitable scope, the universality of Milton's conception and his architectonic genius as the highest glories of his work :—

He has involved, in his account of the fall of man, the events which preceded and those that were to follow it; he has interwoven the whole system of theology with such propriety that every part appears to be necessary.

And, in spite of the outcry of later critics, there is truth in his contention that the poem has to triumph—he would contend that it failed to triumph—over the absence of human interest, of the sympathy raised in the reader by affinity of circumstances.

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In the biographical part the value and charm of Johnson's work resides in the revelation of his own personality and the contributions of his own experience. That he detested Milton's politics was little of a misfortune, for he would otherwise have been swayed to the other side of impartiality by his reverence for the union of poetry and religion. He is only once genuinely unfair; that is, when he blames Milton's pathetic complaint of having fallen on evil days and evil tongues. In his sneer at the flunkeyism of Edward Philips, who pretends that Milton kept a school without being a schoolmaster; in his advice to discount the stories of Milton's extraordinary success with his pupils; in his views of the proper studies for a cultivated man; in his protest against the notion that genius was bound by the influences of the seasons—a phase, as he thinks, of the self-deception of idleness; in his theory that Milton always intended, and was surprised by death in the intention, of reforming his neglect of family prayers; we can trace the suggestions of his own unlucky experiences of pedagogy, his contempt for natural science, his constitutional indolence and procrastination, with their attendant remorse. His natural shrewdness, sharpened by long experience of the world, appears in his analysis of plausible but unauthenticated anecdotes. And under his rough exterior of cynical common-sense those who look may detect a deep tenderness of nature. It should never be forgotten that, in spite of his hide-bound æsthetical system, Johnson was the author of the most touching stanzas written in the eighteenth century—the lines on the death of Levett.

When he wrote the Lives, Johnson had freed himself of the superabundant Latinity and excessively periodical structure of his "Rambler" style. The roll of his periods had given place to a more concise antithetical balance, often very lively and always effective. The nice balance of the sentences, well adapted as it is for epigram, lends itself more readily than Macaulay's "snip-snap" to judicious reservations and suspension of opinion. Johnson's epigrams are distinguished from Macaulay's by their conscious preference of art to utility. Johnson coined epigrams because he loved epigrammatical effects; Macaulay fashioned them as missiles for real or imaginary opponents.

The "Life" may be studied in Mr. Deighton's edition (Macmillan) or in Mr. Nichol Smith's edition (Blackwood). Macaulay's Essay has been edited by Mr. Cotterill (Macmillan) and by Mr. Mackie (Longmans). Johnson's inaccuracies, which will be found corrected in these editions, should be noted. The article in the "Dictionary of National Biography" should be consulted, especially for the bibliography of Milton's controversies, 1641-1654. The date 1659 is wrongly given in the body of the article for the publication of the "History." It should be 1650. Macaulay occasionally needs correction, *e.g.*, in the approximate date assigned to "L'Allegro" and "Il Penseroso."

THE TEACHING OF MODERN FOREIGN LANGUAGES.[1]

By PROF. HERBERT A. STRONG, LL.D.,
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I HAVE no doubt you are all familiar with Henry Sweet's "Practical Study of Languages:" this and Spencer's "Aims and Objects of Teaching" should be in the hands of every teacher of modern languages. You know quite well that Sweet would base all his teaching of modern languages on phonetics; but I am afraid that I am old fashioned enough to believe that the imitative faculty inherent in children is the basis of modern-language teaching and that this faculty should be cultivated from the beginning. I hold a knowledge of phonetics to be a most valuable adjunct to the knowledge possessed by a modern-language master, because by the technique of the art which he has mastered he will be able to adjust the vocal organs of such pupils as may be unable to seize sounds by imitation. I think I am right in stating that the opinion of the authorities at the Paris Congress was on the whole favourable to my view.

I regard, however, the methods of teaching modern languages as different from those for teaching dead languages. The study of modern languages is the study in the first place of *utterances*—of uttered sound; and I hold literary dialects to be based upon the colloquial dialects, and, consequently, this seems to me the logical order for the study of modern languages to take. Writing is a rough and very imperfect way of rendering sound, unless indeed we are going to adopt a phonetic alphabet; but even admitting that this system is the best, to counsel its adoption is merely a counsel of perfection, and it seems wiser to me to speak of something which we can all carry out.

After the principle that language consists in sound comes the further principle that the unit of language is not the word but the sentence, and the whole intonation of any period in language marks the division of that period into sentences. Further, and this is a most important point, it will be found that the majority of words actually receive their meaning, or modify considerably their meaning according to their position in the sentence. If I say, "How are you getting on?" *How*, *are*, and *getting on*, derive their meaning, the meaning which the speaker intends that we should attach to them, to their position in the sentence; while in "Here you *are*," *are* has a different meaning from the same word as used in the previous sentence. Similarly with "*Comment vous portez vous*" and with "*Wie geht's?*" *Comment* is here meant to extract the answer well or ill, and *portez* and *geht's* has a peculiar meaning which we call idiomatic, and idioms to a large extent consist of new meanings given to existing language material by the means of collocation.

Closely bound up with this, again, is intonation, voice-stress, voice elevation and depression, emphasis, slurring of syllables, and generally speaking the whole cadence of the sentence. The Frenchman very commonly raises his voice at the end of a sentence where we drop our voices: and again in exclamations like "*Hei là bas!*" he drops his voice where we raise ours as in "Hulloo!" If you listen to a person who is a clever mimic you will find that it is by transferring the foreign intonation to English that he produces an effect more comical than by the mere mispronunciation of single words. It is these, so to speak, *nuances* of pronunciation which give the main characteristic to any language.

The corollary of the two propositions I have laid down is that beginners in the study of a modern language ought not to be taught to distinguish words at all, but they ought to be taught

[1] Abridged from an Address delivered during the Winter Meeting for Teachers, held at the College of Preceptors, January, 1901.

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sentences. These sentences should be in the first place extremely simple, but it is of vast importance that they should be acquired and uttered with absolute accuracy. This is why I am strongly of opinion that the teaching of rudiments should be entrusted to a superior teacher. Children are by nature more or less imitative. The imitative faculty can be largely developed by an expert: and sound acquired in childhood can be reproduced all through life. Those who have the opportunity of impressing foreign sounds on children at an early age should not lose the chance of doing so, whether by the employment of foreign *bonnes* or by other means. Even if you succeed in teaching a foreign language by means of a phonetic alphabet you will find a truer ring in the sound caught by direct imitation than in that which proceeds from the process of catching the information through the eye. Remember too that acquisitions, such as that of pronunciation, which come by means of the ear, are not exhausting to that organ, nor to the brain: reading and reflection tire both eye and brain. . . . . .

As soon as a certain number of these sentences have been learnt the teacher should begin to converse with his pupils, taking care to confine himself to the vocabulary already acquired by them, and only by slow degrees should he introduce a few new words or sentences until he is able to knit these into a simple connected anecdote. This is the time to start the little pupils in conversation among themselves. A very simple child's story should be told them in simple words, and questions should be asked upon it, and the teacher should endeavour by skilful means to make them reproduce something based upon the original. The materials are all ready to hand, and the children have merely to use them, and with the least reflection possible.

The Belgian school authorities assured me that this early stage of conversation was found very efficacious in abolishing that *fausse honte* which is the bane of our children. Of course, the charm of little children is that they have no false shame, and therefore the younger they can begin these exercises the better. I am also a great believer in teaching at this stage from pictures. The teacher points out the object, and tells the name in French or German. By this agency, the foreign name will rise up in the child's mind simultaneously with the object on each occasion that he sees the object: this is the nearest possible approach that can be made to the process of learning a language as a child learns it of its mother. Some systems pretend to do this, but the pretension is baseless. The child who has heard a particular object called *pomme* will always associate the picture of the fruit in question with the word "*pomme*": he may from ignorance group other objects under the same name, but there will not be *cross-associations* which will occur when he learns to call the fruit "*apple*" first and then "*pomme*." On the other hand, the child who has learnt its parent tongue has one enormous advantage over the child who is for the first time learning its own language. The latter learns true definitions only by experience: he calls any man "papa" or "uncle": he embraces a *sofa* under the name of a *chair*, and so on, until he have heard the word applied a sufficient number of times. The child who can be taught *about* an object in his own language has in this case the advantage, for he can be taught with approximate clearness from the very beginning.

In order to start the simplest conversational lessons of this kind, the teacher must perfectly understand the childishness of children, and therefore women at this stage make better teachers than men. You can manipulate children like wax if you understand them; but, remember, this early process, the most important of all, requires a trained teacher: for care has to be taken that too many new words shall not be taught at once, and that the sentences be judiciously chosen, and chosen so that analogies between the new sentences and the models may be suggested. The pupils will also at this stage be taught to commit to memory and to sing in chorus simple songs. By this method the cadences proper to the new language will come to them more easily, and something of the technique of the poetry will be made theirs without any effort on their part. If the mistress has been trained abroad, as she should have been, she will be familiar with simple games, which are played in class, such as "oranges and lemons." Of course, the more fun and singing in the exercise the better. I cannot tell you the importance I attach to this early stage: it seems to me impossible to over-rate the care that should be taken in the method of teaching quite young children. Their brain soon tires of book problems, but knowledge conveyed to them through the ear is an inexhaustible store of delight and tires neither the brain nor the eye. They retain the lightest impressions, only these impressions must be made by hammering frequently and not too hard. Their vocal organs are supple to imitate any sound, and if the pedant calls what they have acquired "courier French," the sooner we adopt a few couriers as teachers the better. Indeed, I sympathise with the intelligent mother who advertised for a Latin nurse.

After the age of ten I should have the child taught to read consecutive pieces of French or German. These should be carefully read and explained by the teacher, and the explanation should as far as possible be given in the language desired to be taught. The pieces should be interesting in themselves and should be such that they may be remembered as a whole. Ollendorf and Ahn are uninteresting, and besides suggesting no picture to the eye they employ combinations of words not heard in real life. "The cat of my aunt is more treacherous than the dog of your uncle." "We speak about your cousin, and your cousin Amelia is loved by her uncle and your aunt." "My sons have brought the mirrors of the duke." "Horses are taller than tigers." Children are easily bored and have a lively sense of the idiotic. The pupils should always be taught to converse with each other in the presence of the teacher. The matter and all the hard words will be supplied from the text, and this exercise should be continued till the pupils have a firm grasp of the language and a good vocabulary.

Now comes another point. Everyone must respect and admire the wonderful results of comparative philology, but it is a mistake to try and teach it with linguistics. Many of the notes in text-books are taken up by simply transcribing the results of Kluge or Darmesteter's researches, and the intellectual gain of this process cannot be much unless the processes whereby they were arrived at be known as well. At the same time the ideal teacher must be a philologist as well, and he ought to be able to point out to the pupil those words in English which resemble words in French or German, and the ordinary variations which these words may be expected to take. For instance, I should teach a pupil at quite an early stage that *camp* and *champ* both come from the Latin *campus* but from different dialects of French, and that these are represented in English by *camp* and *champ* respectively. I should encourage him to seek out parallel examples for himself, and thus insensibly to acquire the conception of French as modern Latin and of German as cousin to English. He might learn that *knabe* and *knave* are one word: *rabe* and *raven*: and he might learn what influences make words change their meanings. The pupil will constantly frame analogies for himself, and it is as well he should early be put on the right track. Those alone should be kept to philology who intend to become specialists in this study.

Grammar is by no means to be discarded as useless, for grammatical forms are connected by association, and to discard the results given by grammarians is lightly to dismiss the experience of past ages. But life must be breathed into grammar

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by employing the formulæ supplied by grammar at once. After the pupil has mastered the language so as to be able to read at sight with some facility, then, and not till then, would I take one of the easier classics and read it gradually through; but I would never neglect the exercises in conversation, which would turn in this case upon the classic in question. Dictation would form an important lesson, but only if it is possible for the dictation lessons to be carefully gone over and corrected with each pupil, and it is far wiser to make the pupil read out his corrected version than merely rewrite it.

. . . . . .

I have seen in several schools unfortunate pupils essaying to learn four languages besides English. Needless to say they were mere smatterers in all. In the last stages of school, the reading would of course be more advanced, and essays in French and German would be added which would be discussed by the master with his pupils in the language being learnt. Before leaving school the pupil should master at least the *technique* of French Alexandrine verse; this is fully explained in Mr. Eve's edition of Casimir Delavigne's "Louis XI." I have found very few pupils able to understand and explain the principles of French versification, and yet every schoolboy is expected to understand those of Latin and Greek verse. I call particular attention to this, because many passages of "Corneille" and "Racine," whose melody cannot be appreciated without some knowledge of the rules under which their authors worked, are learned by heart. In the last year of their school curriculum, too, I think that pupils should work with a good historical grammar like Darmesteter's, from which those especially who know Latin will reap much benefit.

I ought to add that in all examinations for modern languages *viva voce* ought to play a leading part. This sounds a mere truism, but I am sorry to say that in some of our most important public examinations *viva voce* is conspicuous by its absence.

In the last or literary stage of instruction, which is carried out at the University, it seems to me that the great thing to remember is that progress lies through the easy to the more difficult. Read in the beginning of your literary career such authors as are at once good and simple, and by simple I mean such as are adapted to conversational language. Much of Daudet in French answers to this description; much of M. About's sparkling work was at the same time quite simply expressed, and most of the expressions did not transcend the originality which might fairly characterise the conversation of a French gentleman.

I think that earnest pupils often make the mistake of committing to memory at too early a stage in their career passages from a French or a German classic. Now it is quite true that committing to memory of simple French or German is an admirable exercise, and, if you think of it, many sentences which you use in the course of your daily conversation are simply echoes of previous utterances that have fallen from some one else's mouth. The thought may be your own, but you cast it in the first mould ready to hand. Now the great classic writers are unconventional, original, striking, sublime; in any case, their diction differs as much from the language of modern life as the *lingua vulgaris* did from classical Latin. The result, then, of learning the classical language may be an unconscious imitation of an exalted diction, which may lead to such mistakes as that described by Sweet as having been made by a German clerk in Hamburg. This gentleman had assimilated the style and diction of Bulwer Lytton. It happened that his firm had a consignment of leeches, which are delicate creatures, and the passage was rough; so this German clerk wrote to the English firm and said, "Dear Sirs, we beg leave to acknowledge receipt of consignment of leeches as per invoice, but regret to be obliged to add that the greater part of them have gone to glory."

I am afraid that all that I have said is an old story; but it is only by hammering away that we shall get educational reforms. *Stillicidi casus lapidem cavat!*

THE COLLOQUIAL TEACHING OF FRENCH.[1]

By S. Barlet, B.Sc.
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Eighteen years ago I stood on this very platform of the College of Preceptors, and endeavoured, as best I could, to urge upon my hearers the necessity of a reform in the study of modern languages in the schoolroom. I pointed out the educational value which these languages were gradually acquiring, and how they forced themselves upon the attention of all teachers; I showed how, from a study *de luxe*, or from a recreative relaxation, they have come to impose themselves as an indispensable item in the curriculum of schools, exacting, as they grew in importance an ever increasing place, and demanding, as a condition *sine qua non*, that not only they should be taught from a literary, but also from a colloquial point of view. But the Headmasters of Public Schools, in solemn conference convened, had then but lately and publicly declared that modern languages could not be taught colloquially in the schoolroom; and I am much afraid that the audience, following the powerful lead, felt somewhat inclined to believe they were right, and to look askance at such a revolutionary idea. Times, however, have changed, and so with them have ideas; and the living power of modern languages has asserted itself and compelled recognition at all hands. Now the Headmasters themselves clamour for a revision of the methods of teaching them, and insist upon their colloquial value.

It is now felt by all, and strongly felt, that, under the new conditions which our relations with our neighbours impose upon us, the old system does not furnish us with weapons of attack and defence adequate to cope successfully with our opponents in the struggle for a comfortable and remunerative place in this grim world. And it is furthermore felt that a liberal education is now incomplete without a knowledge of modern languages.

I have tried to read the best foreign authors in French; but they never carried to my mind the lucidity of ideas, the graphic power of thought and expression, the depth of philosophy, which impressed me forcibly when I read them in the vernacular. Goethe, Shakespeare, Dickens, Lessing, ceased to be English or German. Nor were they French either. They struck me as obscure, dull, unworthy representatives of the genius of a great nation. And surely it must have been the same with you when reading the masterpieces of foreign thoughts in any other language than that in which these thoughts were cast. Compare Dante in Italian and English! Everywhere, when we so read, we find something that, somehow, goes against the grain; something halting, unfinished, unexpressed, or rather improperly expressed; something like a mist between ourselves and the author, which causes us to remain cold, unappreciative, unsympathetic. What a difference, however, when the author speaks to us in his vernacular, when we can hear him, understand him, feel the warmth of his pathos, live his life and that of those around him!

[1] Abridged from an address delivered during the Winter Meeting for Teachers held at the College of Preceptors, January, 1901.

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But in order to be able to do this we must not be only book-learned, we must know the people of whom our author speaks, know them in their ways of life, in their ways of speech, of thought, of expression. We must know them in their philosophy, in their morals, in their worldly habits. In a word, we must be able to see them in their everyday life, appreciate them from every point of view. They must talk to us, discuss with us, even quarrel with us. And to do this we must understand their language, be able to speak it. If not, everything will remain shadow and prejudice, despite the best author's endeavours; we shall still be as we were, without having made one stride forward towards a better knowledge of our neighbour, and a consequent better knowledge of our own selves.

How are we, then, thus to become citizens of the world?

The answer is simple: let us learn his vernacular, be masters of it in every shape and form. Let it be our own when we are at his elbow, and chat pleasantly, and argue, or quarrel.

How are we to acquire this learning? Obviously by a stay in foreign lands, by means of intercourse with the foreigner at home or abroad. Such intercourse can actually be of value to us, from a moral point of view, only when our powers of discriminate observation are fully developed by education. It can be of advantage only if we understand and speak the language of the country through which we travel, of the stranger with whom we would associate. It can be of advantage only after we have learnt the language first at home, otherwise we are condemned to spend months groping about in the dark, or never to know our neighbours.

None will dispute the fact that to know a language means to be able to think in that language, to understand it easily when fluently spoken by natives, and to be able to take a part in the conversation.

What has school done so far to impart such a knowledge?

Lord Rosebery, Viscount Wolseley, and other high authorities have said, and do say, that the teaching of modern languages is a snare and a delusion, and that in these days of educational reform it seems little short of a scandal that so little success is being achieved in our schools in the acquisition of modern languages.

To build up language knowledge, whether a child learns it at school or learns it from the cradle, there is but one royal road: *Repetition!* constant repetition! everlasting repetition! But if we adopt colloquial teaching, we shall soon find that repetition is not in any way irksome. A language, I need not tell you, must be assimilated, not learnt. By dint of repetition of sentences, the ideas they express are gradually assimilated, and come at last to be actually thought. The ear and the memory are, first and foremost, brought into play, while thought and the framing of thought are of later growth.

I said the ear is one of the primary factors to bring into play. Hence, as the first condition of sound and useful knowledge, we should begin to learn a language colloquially. On this point we seem now all agreed. First, the master produces the sound; the pupil echoes and re-echoes it until his ear has grown so accustomed to the sound that, where and whenever heard, it will be instinctively recognised, and cause a chord of knowledge, if I may so express myself, to vibrate within his mind. Words are but a succession of sounds, sentences a succession of words, and thus a child may be made to assimilate, and, ultimately, fluently and accurately use, a variety of useful sentences.

I will not here speak of phonetics, but I would venture to say that the eye should often be brought into play as a complement to the ear. I quite agree with Mr. Eve that the eye plays a more important part in the process of learning in the case of foreigners (English children learning French, for instance) than in the case of natives learning their own vernacular. Hence the picture-book, or the conversational wall-picture, becomes a powerful aid at the outset. And here slyly insinuates itself the portentous query as to who should teach the foreign language: the English or the foreign teacher?

It must be owned that the English teacher of eighteen years ago and the one of the present day are altogether different men as regards their knowledge of foreign languages. Necessity has perforce brought it home to the Englishman that, in view of the growing importance of foreign languages in England, he must equip himself with a sound and practical knowledge of them, if he wishes to make headway in the scholastic profession. And he has done, and continues to do so, whenever the chance occurs, by spending his holidays in France or Germany, at Marburg, Caen or Paris.

And yet, listen to Miss Beale, the Principal of Cheltenham Ladies' College:

"During the middle of a girl's school course, English persons should, I think, teach in conjunction with foreigners; but the pronunciation of the beginners and the difficult compositions of the highest classes should be committed to natives. We have always given some of the foreign-language teaching to Englishwomen, but we have foreign teachers as well. The number of good English teachers is at present very limited; if a French person has lived many years in England, and can be persuaded to give up the mere routine methods, I think we must acknowledge that she will be, in many respects, more capable."

The Headmaster of Reading made, at the Headmasters' Conference, the following, to my mind, very striking and, perhaps, unfortunate remark that, when he had the French conversational class at Bradfield, he found the British boy did not care to talk French! The teacher brings us to the methods. Of course a large demand has brought forth a vast supply, and pretty well every school-book tends now to be conversational. Each one purports to be a *new* method, which new method is but the old, old way dressed up according to the fashion of the day, the whim of the hour. In languages, as in many other things, we can hardly create; even new-fangled words are but a conglomeration of old chips pieced together. However, from a teacher's point of view, they all, I venture to think, fail in one essential point; they are not educational in the true sense of the word. With one and all you will be able to teach a large, varied and useful vocabulary; give impressive instruction in the intricacies of the grammar and the humours of the verbs; attain a final result which will be accepted as satisfactory. Your boy or girl will speak, say, correctly and intelligently. But I am afraid that, morally, he will not be much better. You will have instructed, not educated, him; you will have crammed his intellect, not developed his moral sense; he will know more words, more rules, but not more or better principles; he will be a better scholar, hardly a better man. What, therefore, I should like to see in the class-room is a method, a new method, if new it must be, that would combine the double advantage of education with serious and competent instruction—a method which would force the pupil to acquire an extensive vocabulary and help raise up a solid building with the verb as key-stone, for satisfactory progress in speaking and writing is impossible without a rich vocabulary and an exact knowledge of the meaning of words; and words without the verb are pretty well like so many loose bricks and no architect.

It should keep three big essential steps in view—talk, read and write. And the way I would suggest, in order that such an end may be obtained, is as follows:—

I will pass over the preliminary steps where pronunciation, the mechanism of the verbs, many elementary principles and a fair number of useful words and phrases have become gradually the property of the young pupil. I take him when he enters a

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higher form. The teaching of the language colloquially, in such a way as I have pointed out, should then begin in earnest.

In order that conversation may be interesting to all, all should take part in it. The pupils should follow it in all its phases; interest themselves in the subject; formulate the answers; point out and correct mistakes as they occur; well weigh the questions and their meanings; answer them to the best of their ability, and thus ensure, for their own benefit, a continuous flow both of words and thoughts. A great deal of the above must rest with the master as to the way he will lead the conversation, invite interest, impress the mind and elicit answers; but a great deal will also depend on the theme chosen for conversation.

It is with difficulty that a general conversation on one topic is kept up undiverted, even in a company of grown-up people fully masters of the idiom they use. Much more so will it be with pupils who are easily distracted, whose knowledge of the tongue they are expected to use is as yet very imperfect, and to whom anything of too serious a character is apt to become tedious. They cannot be kept constantly harping upon the material for breakfast, dinner and tea, the contents of the grocer's, the dairyman's or the butcher's shop; they cannot be asked day after day whether their or their neighbour's necktie, coat, stocking or handkerchief is blue or red, cloth or silk, worsted or cotton, clean or dirty, &c. Such practice is very good in its way, but it is hardly conversation. Besides, I suppose all this to have been done, and repetition of the kind would hardly be progress.

The great point is to find a suitable book for conversation. In the hands of a clever man any book may do. But we must not be too exacting. Where one will succeed many may fail, and our purpose is to make all succeed. So our choice must fall upon a book suitable to the minds of the pupils, which will combine all the elements necessary to excite interest, in order that it may be useful in every way. I cannot think of a book better suited to the purpose than Lafontaine's Fables.

First, they are fables, and at once grateful. The youthful mind revels in those simple narratives, unreal yet so real, which should assume by degrees, under the skilful manipulation of the master, meanings and bearings so as to charm and elevate it. They are a monument in French literature; they are written in elegant, fluent, easy French, which, though perhaps ancient here and there, yet is not old. Numberless quotations are, and will remain for ever, as proverbs in everybody's mouth, and may be met with at every step in books and conversation. They are short, complete tales, pithy and moral, and therefore are easily learnt. Plenty of mythological lore is found in them, and thus a good deal of classical learning could be taught at the same time. There are few books, as far as I know, which could combine so many advantages; few more moral or so full of that common-sense philosophy which would enable the master to apply, at a more advanced stage, to society at large the points developed in the conversation or motives of animals. Thus a glimpse may just be had through it into society, its ways, means and ends which, skilfully touched upon, should not prove wholly unbeneficial.

Let us take a fable of Lafontaine's, any practical one, and see how it may be applied. The fable must be translated and gradually explained in all its bearings; nothing should be left undone of that which may interest or educate, and help conversation afterwards. Words, their compounds, their congeners, should be thoroughly gone into for the sake of the necessary vocabulary, and thus, if there be, say, one hundred words in the fable, two hundred more, at least, may be touched upon, which should be used, interchanged, varied, and ultimately should sink into the memory. The work is far from tedious, though it may seem long; its very variety is a safeguard against that evil. And, when the fable has been thoroughly explained and understood, the pupil should be dismissed to his home work. Meanwhile, the tale haunts the pupil's mind; he grasps it more and more firmly, and it is with pleasure that he comes to the next conversation lesson, full of it, and ready to the best of his ability to do justice to it and to himself. Thus is a subject of conversation obtained which is known to all, understood by all, and in which all feel interested.

In this class of beginners, the fable and its framework of words should alone be kept in view. Varieties of construction should be constantly brought in, and the same idea dressed and undressed, so that, under each new disguise, it may appear as a stranger, and yet be recognised as a friend. The questions should be put so that all the answers could be derived from the book, without having to bring the reasoning powers into play. A quick fire of questions and cross-questions should be unceasingly kept up, so that the interest should never flag; and thus an hour will elapse unawares to boys and master alike. During that hour, if the work has been conscientiously prepared, I should think that fifteen questions might be asked of each pupil individually in a class of twelve, making a total of 180 answers. Or, say, only 100 answers be obtained, with an average of five words each; say such a lesson takes place four times a week during forty weeks; that twenty different fables are carefully gone through, and I leave it to you to calculate the possible result even to the dullest boy.

In the class above, the pupil should be freed, to a great extent, from his leading-strings. The same fables, say, should be taken up again, but a wider range of thought should pervade the questioning, and the boy would thus have to call to his aid his general knowledge, his reasoning powers, his common sense, his discrimination between right and wrong, wisdom and folly, vice and virtue. He should be made to do that which pupils are not often enough allowed or made to do—think a little for himself, and use both his critical acumen and his imagination. Later on, the work should become higher still, more ethic, more generally philosophic. Conversation might not then be strictly confined to the fable, but allowed to diverge into the ramifications of thought which a well-timed question or answer might bring forth, and the pupils be made critical judges of each other's opinions. In fact, at that point, for the sake of conversation, free scope should be allowed them to launch into ideas of their own, and each question might practically give rise to a small French essay on the part of the pupil, which would be judged by the master according to its merits, logical and literary.

The work of correction—words and ideas—would continually be going on, and the pupils would be the gainers in more ways than one; their logic and moral sense would become better trained, and they would soon acquire a precision of expression, a power of thought, which the mere reading of books cannot give them. Much would be learnt which was new, and much repeated which was old, but yet not firmly grasped. A double aim would be attained: mental education which would also become a moral education, and power of expressing at once, in the foreign idiom, thoughts conceived undoubtedly in English—for it cannot be expected that the pupils could think in the foreign idiom, surrounded as they are by objects that speak to them nothing but their mother-tongue. But the undeniable fact, I think, remains that a class would be formed to which French alone might be spoken, which in a spirit of emulation, and on account of the very interest felt in the subject, would readily imitate its master, and, like him, *could* and *would* speak in French.

Meanwhile, also, recitation, dictation, paraphrasing, would have been in constant practice; grammatical points would have been dwelt upon and expounded, difficulties made easy, word-formation brought into operation, exceptions learnt; every

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theory would have been discussed, practically developed, and firmly grasped.

Although the pupils might perhaps not know the grammar by heart so well as they do now, they would understand its application better. I may fairly contend that they would therefore be able to explain it better, not by rote, but by actual handling. And I have no doubt whatever that their translation, construing and composition would be far more idiomatic and less faulty.

Thus, I believe, the pupils would have become not only better prepared for any examinations they might have to undergo, but they would have attained, in a pleasant and intelligent way, the goal henceforth set in the schoolroom to the study of modern languages, the training of the intellect, the training of thought, the training of the mind.

[A number of boys, whose average age was about 12½ years, were presented by the lecturer as a "transition class" at the end of the lecture and put through a general conversation, having for its theme Lafontaine's first fable "La Cigale et la Fourmi." The way in which the boys acquitted themselves elicited the applause of the audience several times, and the demonstration made it sufficiently clear that in the hands of a good teacher the method advocated was capable of producing excellent results.]

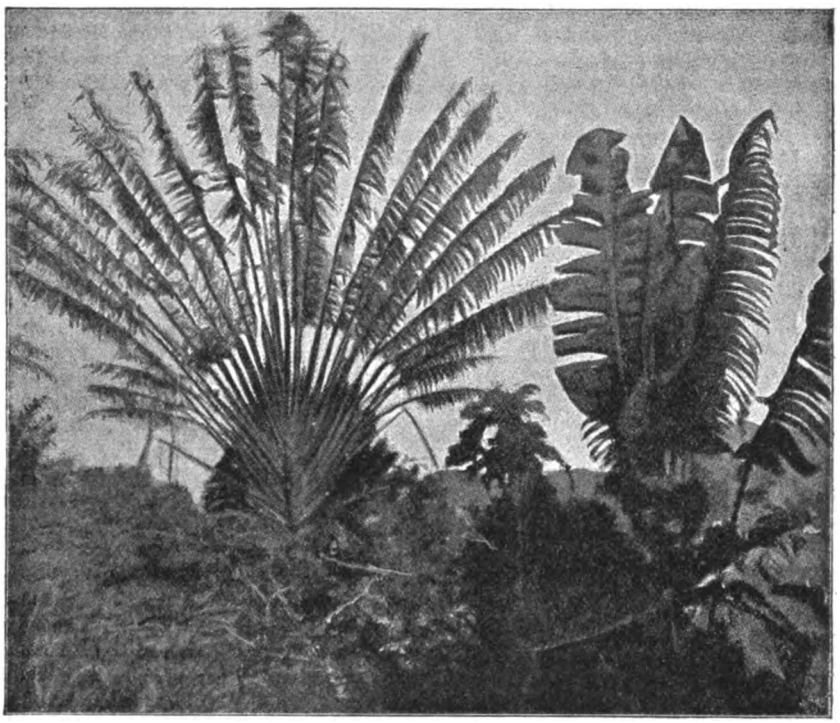

FIG. 1.—The Ravenala, or Travellers' Tree of Madagascar.
From Keller's "Madagascar, Mauritius, and other East African Islands." (Swan Sonnenschein.)

CURRENT GEOGRAPHICAL TOPICS.

By A. J. HERBERTSON, Ph.D., F.R.G.S.

Madagascar.[1]

MADAGASCAR, the most important of the East African islands, is nearly twice the area of the British isles. Most of it lies north of the tropic of Capricorn, about 250 miles from the mainland, from which it is separated by the Mozambique channel, little over 1,000 fathoms deep.

The east coast forms almost an unbroken straight line. Above it rises a succession of terraces to the plateau 5,000 feet high, which forms the bulk of the eastern half of the island. The grain of the land lies from south to north. The steep slope is to the east. The rivers cut across the grain of the land directly to the sea, except the Mangoro and Maningoro, which flow in a great longitudinal furrow in their upper courses. The gentle slope is to the west, but here also the largest rivers, the Betsiboka and its tributary, Ikopa, flow for a long distance along the grain.

The plateau is a rather bare undulating region, higher in east and west than in the centre. It is formed of old crystalline rocks, with here and there masses of recent volcanic rocks piercing it. The highest part consists of the fine cones of the Ankaratra mountains in the centre. The western slopes are composed of sedimentary deposits of jurassic, cretaceous or tertiary age, with some young volcanic outcrops.

Madagascar is in the region of the south-east trade-winds, but is also occasionally visited by the devastating cyclones which work so much havoc in Réunion and Mauritius. Rain falls at all seasons on the eastern slopes, where it amounts to over one hundred inches per annum. The south-west is exceptionally dry, with less than twenty inches of rain, and there is a distinct dry season throughout the west. The plateau is probably as fit for white men as Réunion or Mauritius, where many have long been settled.

Madagascar has long been isolated from the mainland, and its flora and fauna are exceptionally rich in peculiar species, for geographical isolation is probably "the first and essential factor in the formation of new species." It has been separated from Africa since miocene times, for the great carnivores (such as the lion and leopard), antelopes, apes and elephants, which spread towards the south of Africa in this period, did not reach Madagascar. Half the species of birds are endemic, but of the others two are related to African species to every one related to an Indian species. The great eggs of the now extinct giant ostrich-like Æpyornis, probably the roc of Sinbad the Sailor, have been found a foot in diameter and capable of containing nearly a couple of gallons of liquid—truly a Gargantuan dish.

Great mangrove swamps, clumps of coco-nuts and screw-pines (*pandanus*) are found round the coast, as well as fruits, such as guavas and mangoes. Further inland the flora is less cosmopolitan. The ravenala (see illustration), also called the traveller's tree, is a gigantic fan-shaped banana, with water (and also numerous decomposing insects) in the sheaths which

[1] The recent translation of the new volume of the geographical monographs edited by Prof. Kirchhoff is the basis of this article. "Madagascar, Mauritius and other East African Islands." By C. Keller. Translated by H. A. Nesbitt. (London: Swan Sonnenschein & Co., 1901.) 7s. 6d.—A good description of the tropical forest will be found on p. 36, and of the people of Madagascar in chapter vi. We are indebted to the Publishers for the blocks of the two illustrations.

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enclose the axils of its leaves. The raphia palm is as useful as the bamboo, which is found higher up the mountain sides. The tough mid-ribs are used for making huts, the fibres for palm cloth, the straw for stuffing pillows, the pulp for seasoning rice, and the pith is the palm cabbage (*chou palmiste*) of the Paris market. On the plateau and in the west grass-land with rich river-woods prevails. Here cattle are kept, and in parts rice is cultivated.

The people, like the plants and animals, are partly of African, partly of Oriental origin. On the highest part of the plateau the Hovas and Betsileos are distinctly Mongolian in appearance, and are closely related to the Malays. The other tribes, collectively known as the Malagash, are negroid, some with a slight Malayan strain. The most important are the Sakalavas, who occupy the western half of the island.

The first French colony was formed in Madagascar in 1642. The whole island became a suzerainty in 1885, a protectorate in 1895 and a full colony in 1896.

Réunion.

Réunion is a lofty volcanic island, 750 square miles in area, lying east of Madagascar. It contains an active volcano, the Piton de Fournaise (8,600 feet). Three craters surround the loftiest peak, the Piton des Neiges (10,230 feet), which is shown in the accompanying illustration. This peak is often covered with snow, so that great contrasts of temperature are found within short distances. On the coast the climate is mild and equable. The trade-winds bring rains, especially to the eastern slopes. "It has a hot and wet season (*hivernage*) from November to May, and a cool, dry period from May to October." The vegetation is of exceptional luxuriance and beauty, and readers are referred to Bernardin de St. Pierre's "Paul et Virginie" for graphic descriptions of it. Sugar-cane, vanilla, manioc and maize are grown on the lower lands, and coffee on the mountain slopes. In addition to French creoles, there are numerous half-castes, as well as pure Malagash, East African negroes, Hindus and Chinamen.

FIG. 2.—The Crater of Cilaos and the Piton des Neiges in Réunion.

From Keller's "Madagascar, Mauritius, and other East African Islands." (*Swan Sonnenschein.*)

Wallace's Line and the S.E. Boundary of Asia.[1]

The deep strait of Lombok separates the island of that name on the east from Bali and Java on the west. The deep water continues through the strait of Makassar between Celebes on the east and Borneo on the west. In most books it is stated that east of this line the fauna is of Australian type, west of this line of Oriental type. This was first pointed out by Alfred Russel Wallace, and the line has since been known as Wallace's Line. As there appeared to be a more distinct break in the continuity of the distribution of species at this line than elsewhere, it was supposed that it was the oldest break in the continuity of a land surface which made Australia part of Asia.

A more careful study of the fauna of Celebes showed a larger proportion of Oriental species than was suspected, and it became doubtful whether Wallace's Line should be drawn west or east of that island. Still more recent researches show that not merely Celebes, but also Lombok and the other lesser Sunda islands, as far east and including Timor, but excluding the Moluccas, have more in common with the Oriental than with the Australian region. East of Celebes and Flores begins the transition region from Oriental to Australia. In the Sunda islands, according to Hartert, the fauna is originally Oriental, and the Australian fauna is slowly moving westwards. In support of this we find that the high-mountain fauna and flora of the Malay Archipelago have strongly-marked affinities with those of the Himalayas.

This faunal boundary almost coincides with the physical one assigned to south-eastern Asia, namely, the volcanic line of the Sunda islands on the south and of the Philippines and the Moluccas on the east. It gives to the Australian realm the Moluccas and Tenimber islands, which rise above the steep slope falling from 100 to 1,000 fathoms from the continental platform of Australia. The physical boundary lies west of New Guinea and the Aru islands, which rise above the Australian continental platform itself. The ordinary physical dividing line is therefore the edge of the Australian continental platform, the biological one at the foot of the steep slope which falls away from it.

[1] A discussion of recent contributions to the study of the Distribution of Animals will be found in the *Zeitschrift* of the Berlin Geographical Society for 1900, pp 147-238.

The Aim of Technical and Commercial Education.—Our aim as the greatest colonists of the world must be to build up a race of intellectual handicraftsmen and highly-skilled artisans, and thus to secure for ourselves some of the advantages which must otherwise fall to the share of other nations whose system of education has made their workmen more keenly alive to the economic significance of improved methods of output, and to the commercial value of more artistic design and cleaner finish.—James Baker.

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ITEMS OF INTEREST.

GENERAL.

THE attention of teachers of English is directed to the Prize Competition, particulars of which will be found on p. 120. It is generally agreed that too little trouble is expended on the teaching of composition, and that by far too little time is given to the subject. Yet it is not difficult to develop a lively interest in the lessons in essay writing when quite a small amount of enthusiasm is shown by the teacher. We believe the skeleton essays, which have been prepared by an experienced English master in a well-known secondary school, will prove very useful in inducing pupils to make a serious and intelligent effort to express themselves in writing. We hope there will be a spirited competition for the prizes offered.

THE Executive Committee of the Association of School Boards have drawn up a form of petition to the House of Commons dealing with higher-grade and evening continuation schools. A copy of the petition has been forwarded to School Boards throughout the country, with a request that it may be modified to meet local requirements, adopted by the Board, and presented to the House of Commons through a local member of Parliament. The petition summarises the steps in the growth of the schools concerned, and sets forth how the recent decision in the Cockerton case will, if upheld, affect their work.

FOLLOWING the suggestion made by Mr. Justice Wills, in delivering the judgment that a School Board cannot legally spend the rates in providing science and art teaching in day-schools nor for adults in evening schools, when the now notorious case of "Regina *versus* Cockerton" was before the King's Bench, the School Board for London have decided, by a substantial majority, "That steps be taken to appeal against and, if necessary, to obtain the decision of the highest tribunal on the judgment of Mr. Justice Wills and Mr. Justice Kennedy in the case of "Regina *v.* Cockerton" (District Auditor) on December 20th, 1900." We are glad of this. As the Hon. Lyulph Stanley pointed out, in supporting the resolution, whether the appeal goes against the School Board or not, it is certain that Parliament will be able to legislate with greater knowledge after an appeal, for the issues can be more satisfactorily drawn out and the judgment made more clear.

AN appeal has been made in a widely-circulated letter for subscriptions to a fund being raised to meet the costs attendant upon the successful action of the council of the Camden School of Art in the "Regina *v.* Cockerton" case. The Court ruled that it had no power to allow these costs. "Early in the case it became evident to the council of the Camden School of Art, who could only spend money as individuals and not as a corporation, that they could not by themselves face the risks of the prospective litigation, which it was certain would be costly; and a representative committee, consisting chiefly of educationists, was formed. The members of the committee, amongst their private friends, raised a guarantee fund which, however, is not at present sufficient to meet the necessary expenses, should the School Board determine to carry the case right up to the House of Lords. The School Board have already given notice that they propose to carry it to the Court of Appeal. The committee, therefore, feel that the time has come when they should look for financial support to a wider public." Subscriptions towards the fund should be sent to the hon. treasurer of the committee, Mr. Francis Hawkes, 2, Dunsaney Road, West Kensington, W.

SECONDARY education is being looked after by the Kent Technical Instruction Committee. In the estimates of the last two quarters the committee has assigned £1,300 to the purposes of secondary education, and there are in recent reports abundant evidences of their keen interest in the welfare of secondary schools. A good example of co-operation is supplied by the governors of the Folkestone Grammar School arranging with the Municipal Technical Institute Committee that their pupils shall receive instruction in science in the institute. Though this arrangement may disturb the internal organisation of the grammar school a little, expenditure is saved to the governors, and probably to the county committee as well, and existing premises are made much more useful.

THE exhaustive scheme of the Technical Instruction Committee of the Essex County Council for the provision of secondary education in different parts of their administrative area has received a serious check by the recent decision of the Colchester Town Council. The county grant for the advancement of secondary education was very properly made dependent upon a suitable contribution from the rates of the assisted locality, and this assistance the Corporation of Colchester refuse to vote—a line of conduct which compares very unfavourably with the action of other local bodies in the same county. The provision of elementary education is no longer an optional matter, and the ultimate result of refusals to provide for secondary education will, when the value of it to the nation is better understood, lead to legislation along similar lines to those which called School Boards into existence, for the creation of necessary secondary schools.

AT the Conference of Science Masters in Public Schools, referred to last month (p. 67), Mr. G. H. J. Hurst, mathematical master at Eton, said that until the old Universities changed the character of their examinations in mathematics, there was little hope of any reforms in the teaching of the subject to pupils preparing for these examinations as a proximate end. He writes fully upon this topic in *Nature* of Feb. 14th, and shows himself to be a supporter of the practical methods advocated by Prof. Perry. We scarcely expected to find that Mr. Hurst was also among the prophets. The specific points to which he directs attention in his letter are that (1) the hands of mathematical teachers in public schools are tied by the conditions of the University examinations; (2) in arithmetic more attention should be paid to the decimal system; (3) the Euclid should be curtailed and some of it put into algebraical form; (4) too much time is given to artificial questions in algebra; (5) trigonometry ought to be begun earlier; (6) more hours might be allotted in the week to mathematics and physics; and (7) the classics are given an abnormal and unjustifiable preponderance in an ordinary boy's education.

THE Technical Instruction Committee of the Lancashire County Council, owing to the inadequate preliminary training of the technical students in their aided schools, propose, after the current educational year, to make it a condition, preparatory to any grant being made by the County Council towards the expense of a class in technological subjects, that each new student before entering the class must give satisfactory evidence of his knowledge in elementary subjects, which may be proved by the production of a certificate of his having passed one of several examinations specified. The committee are so convinced of the necessity of students having this preliminary education before entering a technology class that they prefer to give additional support to the elementary science classes under the Evening Continuation Schools Code rather than to continue to aid some of the technological classes where the money is being wasted on students who are unfitted to attend them.

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THE Technical Education Board of the London County Council have opened a day school for boys at the Shoreditch Technical Institute. To use the words of the Chairman of the Board:—"Every year many boys between the age of thirteen and fourteen leave our public elementary schools, but it is not until they are fifteen or sixteen that they think of fixing upon a career. The intervening two years are spent in casual employments. It is for such boys, during this period, that the Technical Education Board have determined to try the experiment of providing a system of extended education—an education of such a character as will fit them for the trades which will be their life-work. To teach a lad a trade in any school would not be possible, even if it were desirable; but a school may give to its pupils such knowledge and skill as will be of use to them when they enter the workshop, and so train their intelligence as to enable them to grapple successfully with the problems which they will encounter."

IN the school established at the Shoreditch Institute the curriculum provides for the continuance of the general education of the scholars. It will also provide for training in manual work, drawing, design, accurate measurement, the nature of woods, workshop arithmetic and mensuration, and workshop geometry. An endeavour will also be made to give the pupils sound conceptions of the fundamental principles of the mechanics of construction and general elementary science. It is confidently hoped that the lad who enters a workshop after having received such an education and training will develop into an intelligent craftsman, and that the time spent in the Shoreditch Technical Institute will result in benefit not only to himself, but also to his employer and to the trade in which he is engaged. Schools on somewhat similar lines exist in America, Germany, and Austria, and it is now almost a commonplace to remark upon the influence which such schools have had in raising the standard of the workmen of these countries.

THE seventeenth annual report of the Association of University Women Teachers, which was adopted at the last annual meeting, is a gratifying record of useful work on behalf of mistresses in secondary schools and governesses in private families. The number of members at the end of 1900 amounted to 826, and during the year 151 appointments have been secured by members through the Registry conducted by the Association. The objects of this useful Association are to bring together for their common interests women with university qualifications engaged in teaching; and to provide women, who possess the qualifications required by the Association, as lecturers, as teachers in public schools, private schools, and families, and as examiners of schools. The report shows that, though only 151 appointments were made, there were 264 applications for teachers to the Registry. This disparity is due, it seems, to the very low salaries offered by public schools and to the regrettable tendency in these schools not to engage teachers over thirty years old.

THE Oxford University School of Geography was opened in October, 1899. Effective teaching, with apparatus, was possible only in January, 1900. During the Michaelmas term of 1900 there were 100 students. Of these, there were 70 men from 12 colleges, and 28 women from 5 colleges or halls. Of the 100, 93 attended only the Reader's lectures, while 5 received laboratory instruction, and attended all, or nearly all, the lectures. A university statute establishing a diploma in geography in connection with the school has been passed by Convocation without opposition. There will be an annual examination conducted by three examiners, of whom one will be the Reader. Candidates, who may be of either sex, and need not be members of the University, will be required before admission to the examination to show that they have received a good general education, and have attended a prescribed course of lectures and study at the school, extending over one academic year. The first examination for the diploma will take place in June, 1901. While the diploma statute was being drafted, inquiries were addressed to a considerable number of important public schools, with a view to ascertaining whether the holders of such a diploma as was proposed would be welcomed as teachers. Favourable replies were received from 32 public schools for boys, and 27 high schools for girls.

THE School Board for London propose to try a new experiment in the teaching of history. Following the example of Germany and other continental countries, it is intended to proceed "from the known to the unknown," and connect the story of the past with the actual local life of the present. The scheme under consideration is to provide, for the higher standard children attending their schools, lectures on the history of the various London boroughs, with lantern-slide illustrations, in the London town halls. The School Board hope that the town halls will be lent free for the purpose, and in such cases they will supply a lecturer and illustrative slides. The Board of Education have expressed their willingness to recognise the attendance of scholars in the higher standards at occasional lectures of the kind proposed, subject to the approval of the special arrangements in each case by H.M. Inspector.

DR. S. S. F. FLETCHER, of King's College, Cambridge, is this term giving a course of lectures on the History of Education in connection with the Cambridge University Day Training College. The result of the examinations in December last for the certificates of the Cambridge Teachers' Training Syndicate have been published. The names of no men occur. Forty-four women have passed in the Theory, History and Practice of Education, four being placed in the first class, twenty-one in the second and nineteen in the third. Twenty-three of these successful candidates are further entitled to certificates of practical efficiency.

THE pupil teachers who have, by the help of the Pupil Teachers' Scholarship Commtitee, been in residence at Oxford and Cambridge during the past year, have done work which compares very favourably with that of their more fortunate contemporaries from public schools. The college authorities, too, give excellent reports of their general deportment. We earnestly hope that the appeal which the Committee is making for more funds to increase the number of available scholarships will meet with a generous response. Canon Barnett, the Treasurer to the Committee, will be glad of donations addressed to him at Toynbee Hall, E.

MR. JOSEPH OWEN, the University Extension student of Oldham, who proceeded to Balliol College, Oxford, as an Extension scholar, who won an open Balliol scholarship, and obtained a First in the Final Schools, has, we learn from *The University Extension Journal*, been elected after examination to an open fellowship at Pembroke College. Our contemporary points out, with pardonable pride, that this is a veritable triumph. We agree. But at the same time we hope that University Extension students will not come to believe that every Extension scholar will have the same dazzling career. It is not given to every person to be able to obtain firsts and fellowships.

SPEAKING at the annual meeting of the Wilts District Union of Teachers, the Master of Marlborough College, during a consideration of the relations between primary and secondary education, gave the following definition of technical education:

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"Technical education or technology is neither secondary nor primary; it is a special supplement of general education, whether secondary or primary; a superstructure planned to correspond in width and height with the foundation on which it is superposed, and sure to be unstable and valueless, unless that foundation has been solidly and thoroughly laid . . . . . Technical instruction should not be prematurely mixed up with that which ought to precede it, but should follow and be based upon a thorough grounding of general education either primary or secondary; it cannot be properly assimilated until the faculties have been trained by such previous education. When this condition is satisfied the pupil of a primary school is prepared to receive that elementary form of technology which imparts knowledge preparing him for industrial arts and handicrafts. The pupil of a secondary school is ready to profit by higher and wider schemes of instruction which open the way to the science or systematic knowledge of industrial arts." Most authorities will agree with this account of the limits of technical education.

WE have received a copy of the current *Mungret Annual*, the magazine of Mungret College, Limerick, which is published once a year. The periodical is certainly one of the best of its kind which has come before us. The large number of excellent illustrations and the amount of interesting information about the school must make the *Annual* very welcome to old students and friends of the institution.

THE Home Secretary, in consultation with the Vice-President of the Board of Education, has appointed a committee to inquire into the question of the employment of children of school age, and to report what alterations are desirable in the laws relating to child labour and school attendance, and in the administration of those laws.

IN an article entitled "The Higher-grade Board Schools" in the *Nineteenth Century* for February, Sir Joshua Fitch considers the recent decision in the case of "Queen *v.* Cockerton." This contribution to the discussion, which shows no signs of diminished animation, is both fair and scholarly. Sir Joshua knows all about the subject, and his intimacy with the needs of the children who have passed through the "standards" of the public elementary school enables him to show convincingly how imperatively necessary it is that means be immediately taken to legalise a due provision of higher elementary instruction.

IN the third of her "Blackstick Papers," which she contributes to the February *Cornhill*, Mrs. Richmond Thackeray Ritchie has much of interest to teachers to say on the education of Scottish children in the eighteenth century. "From sunrise to sunset in winter, from seven in the morning to six in the evening in summer, the work of the schools used to continue. In those days, before coming to school, many of the children had to walk for miles across the moors, sometimes carrying on their backs loads of straw to thatch the schoolhouse roof where the wet came in, or of reeds to lay upon the ground." The paper concludes with the state of affairs at St. Andrews in this year of grace. "They loved the work," is what one reads of the children in one of the schools—as good a commentary on the improved condition of things as one could wish.

A PARTICULARLY interesting educational supplement was published with *Literature* of February 2nd. In addition to a large number of reviews of school books, it contained articles by the Master of Dulwich College and Mr. T. E. Page, of Charterhouse, on "The Position of Assistant-masters," and one on "Conferences and a Council of Perfection" by Mr. Francis Storr. Referring to the projected constitution of the General Educational Council, the nature of which we have already fully described, Mr. Storr says, "the scheme was ill-conceived, and I doubt whether the committee will have the courage to summon again the adjourned meeting." If not, it will be a pity. Actuated by a desire to treat all grades of education fairly, a representative committee should not find insuperable the difficulties of deciding upon the proper representation for the various associations concerned with educational progress.

THE new section of the British Association, to deal with Educational Science, will have Sir John Gorst as first president. The meeting will be held at Glasgow in September next.

IT is gratifying to see that the subject of the salaries of assistant-masters in secondary schools is being kept before the public by letters and articles in the lay press. The *Pilot*, which has been giving particular attention to topics of interest to the educational world, prints a valuable contribution on the subject by Mr. Bridge, of the Assistant-masters' Association. The facts he gives will surprise many people. He shows, for instance, that, though about one-third of the number of assistant-masters in public schools are more than forty years of age, the average salary of assistants throughout the country is only about £135 per annum, and this estimate is believed to be too high.

SEVERAL series of summer courses in manual training and school gardening have been arranged for the months of July and August, 1901, in connection with the Teachers' Training College of the German Association for Manual Instruction at Leipzig. The training in manual work includes lectures on theory, practical instruction, lessons in drawing and probationary lessons for discussion. The work in gardening will comprise two weeks' demonstrations at the beginning of August on school gardening and the cultivation of fruit. The director of the College is Dr. Pabst, 19, Scharnhorst-strasse, Leipzig, but further information regarding the courses can be obtained on application to Mr. James Grigor, Sub-inspector of the Scotch Education Department, 17, Battlefield Gardens, Langside, Glasgow.

AN interesting scheme has been lately formulated by the Transvaal Women's Educational Union. This society, *The Times* says, has in view the healthy, moral, intellectual, and physical growth of the young generation, and the calling into being a feeling of patriotism which shall obliterate racial differences and unite the Transvaallers in the noble ambition of making their country a bright ornament of the British Empire, wherein racial differences find no place. The first step taken has been to formulate a practical scheme for the establishment of schools to afford efficient but cheap education to both sexes; boarding schools as far as possible, because home life in the Transvaal generally is detrimental to habits of discipline and healthy development which form the basis of a fine nation. Provision for day and infant scholars will, however, also be made, and, for a short time, provision for teaching English to those children who do not know it. We wish them every success.

THE Fortieth Report of the Surrey Technical Instruction Committee contains many interesting particulars as to the relations of the County Council with the secondary schools of the county. Some of the facts concerning Wallington Girls' School call for special notice. It appears that half the capital sum which is being incurred for hostel and class-rooms is to be raised by small rates levied by the County Council over three districts served by the school. One of these districts, Carshalton, is not agreeable, but the County Council, with the advice of their Education Committee, see no reason to

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alter their decision. Carshalton will for the next thirty years be taxed, and it is to be hoped their unwillingness will not last the same length of time. This case is the first to occur in England where the superior powers of rating given to the County Council by the Act of 1889 have been exercised.

A new technical school will be opened shortly at Radbrook, near Shrewsbury, for the girls of Shropshire. The subjects to be taught include dairy work, human physiology, and the various branches of domestic science. The school has been built and endowed out of Preston in the Wild Moor Hospital Funds. A few years ago the Charity Commissioners made an order for the sum of £20,000, money not spent on the charity, to be devoted to the erection of a technical school for girls in the county. The site is a little over a mile from the Shrewsbury station. The grounds cover nearly ten acres, and with the buildings the total cost has been £9,000. The county council will contribute £500 towards the annual working expenses. The course of instruction to be given is to prepare students to become heads of households or to take up some branch of domestic science as a means to a livelihood, and some girls will be trained for domestic service.

WELSH.

The teaching of Welsh in the elementary schools is still a subject of anxiety at Cardiff. The Cardiff Teachers' Association have recently made a representation that if, as proposed, Welsh is made a compulsory subject in certain standards, it will be necessary for its efficient teaching to employ additional teachers. As the Rev. J. Morgan Jones pointed out, Cardiff desires to be the official metropolitan of Wales, and should therefore show appreciation of Welsh sentiment. He also maintained that Welsh was of equal value with French, as far as culture is concerned. On the other side, it was argued that no one wished to prevent the teaching of Welsh when the parent wished it to be taught. But that is clearly another question from making Welsh compulsory. Further, it was urged that Welsh can be made compulsory only by the displacing of some other subject of instruction. The opinion was expressed by one member that the views of schoolmasters on the subject had no influence with him. It was decided to again make a referendum to the parents explaining that the compulsory teaching of Welsh, if insisted upon, must involve the relinquishing of some other subject.

Sir George Kekewich is reported to have said, at the opening of a new higher-grade school for girls, that "no school board in England and Wales did its duty better than the Festiniog School Board." Certainly it would be difficult to find any town of the size of Blaenau Festiniog with such an equipment of elementary education of all kinds. Nor must the friendly relations of the elementary schools and the County Intermediate School be overlooked in an estimate of the educational status of Festiniog. So, too, there is a constant stream of students provided from this small town to the University colleges at Aberystwyth and Bangor. The Day Training College at Bangor, we believe, sends its students to Festiniog, so as to have the advantage of practising there in the elementary schools. The buildings and equipment of the elementary schools are excellent. The educational enthusiasm shown on the visit of Sir George Kekewich would not have been likely to be excelled in one of the largest of the English towns. The School Board rate is unusually high, and, what is more to the point, is that the people of Festiniog glory in the fact. It is a working-class population almost entirely, yet the popular feeling is, and has been, that education must be accessible, that it must be good, and that if good education is costly, the cost must be met. The willingness of such a town as Festiniog to pay for education is the clearest sign of educational enthusiasm we have seen in Wales—or elsewhere. It is a first principle which will have to be recognised in other places, if they wish to compare with Festiniog educationally.

No wonder, then, that Sir George Kekewich's enthusiasm was aroused. As the pioneering work of Festiniog may not be known in England, it will be well to quote at length one passage from the report of his speech: "I think, too, that we are under a debt of gratitude to the School Board in regard to the training of teachers. In the matter of the instruction of pupil-teachers—their future certificated teachers—they have set an example which I hope will be widely followed. The Barry School Board, I believe, proceed on much the same lines . . . I understand that in the schools of this district a certificated teacher is, as a rule, provided for every class, and the pupil-teacher does not have charge of any. That is to say, instead of being a mere drudge pretending to instruct, instructing before he knows how to do so, the pupil-teacher is being really trained as a teacher. His very name implies that he is a pupil first, and a teacher afterwards—that he has to be taught . . . The School Board (at Festiniog) utilise the County School for the instruction of the pupil-teachers, and I am much interested in this experiment, which seems in accord with reason and common sense."

The Reports of the examiners in the Matriculation Examination of the University of Wales should give pause to those whom they concern. In geometry the exercises in deductions, excepting two, it is stated, were "very elementary, and the answers to them were certainly disappointing. Some of them were so hopelessly unintelligent as to arouse suspicion of the candidates' comprehension of the book-work." In Mechanics, the report is given: "It would appear as if the teaching of Mechanics in the Welsh schools was most unsatisfactory"—due, apparently, to lack of experimental illustration. In French, the examiner says: "The oral examination, as at present understood, is little more than a farce."

The English reader must be on his guard against misinterpreting these Reports—as applying to the general work of the new Welsh Intermediate Schools. The pupils of these schools chiefly present themselves for the Central Board Certificates, and qualify for matriculation by equivalent subjects in the Senior Certificate Examination. Accordingly, in the Central Welsh Board Reports, in these very subjects so severely criticised by the Matriculation Examiners, we find statements much more gratifying in tenour. Still it would seem that there may be a divergence of view between school examiners and Matriculation examiners. It is to be hoped that both Matriculation examiners and school examiners have had experience in school-teaching.

The Matriculation Examiner in Latin reports that in the oral examination in Latin "the performance of many candidates was unsatisfactory." He appeals for regular practice in reading aloud continuous passages of the prescribed books. He would have false quantities regarded as "sins of the first magnitude." We would suggest, if the University of Wales intend to take up in earnest this question of pronunciation, they should begin with English and require English reading and English recitation for matriculation. And to see that their recommendations in Latin oral tests are properly prepared for, they should require a certain sufficient amount of the Latin author prescribed to be known by heart. But prior to all these things the views of the school-teachers as to their practicability of in-

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troduction might be ascertained. Matriculation requirements in each subject are apt to seem very meagre to the specialist, but the cumulative effect can often be better judged by the teacher, who has the work of preparation for the whole of the subjects.

SCOTTISH.

THE Scotch Education Department have issued a circular stating that, after full consideration, they have decided to make the following modifications in the present form of the papers in Latin and Greek at the Leaving Certificate Examination. To encourage the teaching of continuous prose composition in Greek, the Higher-grade paper will, in future, contain an easy passage of English for translation into Greek. This passage will, in the meantime, be an alternative to the shorter sentences hitherto set. Again, the Honours papers in Latin and Greek will be entirely distinct from those of the Higher Grade. The first Honours paper, which has hitherto been identical with the Higher-grade paper, will in future consist mainly of composition. Candidates who fail to come up to the Honours standard may, on the recommendation of the examiners, be awarded a Higher-grade Certificate.

THE changes indicated above are all in the direction of the recommendations laid before the Department by the Association of Secondary Teachers, and will be heartily welcomed by all concerned. The circular also refers to the complaints that have been made from many quarters regarding the undue difficulty of certain of the papers in Latin and Greek. By implication the Department seems to accept these complaints as well founded, for they state that it is undesirable to set any test which is of an involved or confusing character. They approve of restricting the questions and exercises to a moderate standard, and of demanding a certain amount of correct answering as a minimum. Let the examiners in English and Arithmetic take to heart this excellent precept.

THE first public meeting of the Association of Scottish Headmasters was held in the Royal High School, Edinburgh, under the presidency of Dr. Marshall. Referring to the controversy being carried on in almost all the daily papers in Scotland as to the respective merits of modern and ancient languages, Dr. Marshall said that neither as an Association nor as individuals did they take sides on this question. Their duty was to see that whatever course of study was adopted made for the true education of the pupils entrusted to their care. He certainly thought that the teaching of modern languages in our Universities should be put upon a better basis, and that more scope should be given for the recognition of the work in these languages carried on in the schools. Everyone recognised the disability placed upon modern languages by the University ordinances allocating to them only half the marks possible for Latin and Greek. But the remedy for this unfairness did not lie, as had been suggested by many, in setting up a competition between a large number of rival subjects wherein it was impossible to have a uniform standard of attainments. What the circumstances demanded was the reconstruction of the bursary scheme on the principle of giving bursaries for several lines of study—classical, mathematical, modern languages, and science. This proposal had been originally suggested by Profs. Butcher and Hardie, and had met with general approval. The meeting heartily endorsed the Chairman's proposal, and at last there is a prospect of the end to a long and unseemly wrangle.

THE Teachers' Guild, Glasgow Branch, held an open meeting in Dundas Vale Training College, Glasgow, to consider the question of ancient *versus* modern languages. Representatives were present from the Chamber of Commerce, the University and the various grades of the teaching profession. Mr. Handyside Dick, President of the Chamber of Commerce, strongly insisted upon the necessity of better equipment in modern languages in the case of those looking forward to a commercial career. This could only be attained by schools giving it a more important place in their curriculum than they did at present. He had no hope that this would be done to any adequate degree till modern languages were recognised by the Universities as entitled to equal treatment with the classics. An exceedingly interesting discussion followed, and at the close it was unanimously agreed that the standard of attainments and the standard of marks at the Bursary Competitions should be the same for the modern as for ancient languages.

THE Governors of Gordon's College, Aberdeen, recently sent a letter to the Scotch Education Department complaining of the Aberdeen School Board's proposal to return the fees of those pupils who attended regularly at their evening science and art classes. This action on the part of the Board involves, the Governors hold, undue and unfair competition with the College evening classes in science and art. They further point out that when the School Board some years ago entered on science and art teaching in evening schools, they did so at fees considerably lower than those of the College, the fees of which had in consequence to be re-arranged. The Board's new departure will either increase the cost of evening classes to the Governors, by forcing them to make a similar return of fees, or will compel them to give up this teaching entirely. On these grounds they ask the Department to refuse their consent to the Board's scheme. The School Board have entered into a long and elaborate defence of their policy, and the decision of the Department is awaited with great interest. It may only be a case of *post hoc propter hoc*, but it would almost seem that the Cockerton judgment is to have consequences in Scotland as well as in England.

THE Educational Handiwork Association, after a period of lengthened repose, has awakened at last to its responsibilities and opportunities. The body has recently been recognised by the Department as an examining body for the various branches comprised under Hand and Eye work. Classes have been opened in different centres for tuition in the various subjects, and are being very well attended by teachers.

IRISH.

THE Central Association of Irish Schoolmistresses and other ladies interested in education have presented a memorial to the Board of Intermediate Education embodying resolutions passed at a meeting of the Association in regard to the appointment of inspectors under the new scheme of the Board. They state "that inasmuch as the success and acceptability of the changes which it is proposed to introduce into Irish intermediate education will largely depend on the nature of the inspection established, it is essential that the inspectors appointed shall be persons of high educational standing, who have had recognised practical experience in teaching, and who have made a special study of educational methods and are conversant with the systems used in other countries." In another resolution they suggest that "it is desirable that some women having similar credentials of competency shall be appointed as inspectors."

IT is stated that the Board have appointed inspectors who are not Irish, but brought from England and Scotland. There are not in Ireland many persons highly qualified for such work who are free and willing to take it, but the mere fact that a candidate is English or Scotch by no means guarantees efficiency, while it is

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probable that such inspectors would be ignorant of the peculiar conditions and difficulties of Irish education, and the character of Irish pupils and teachers—a considerable drawback. It is also stated that special inspectors proficient in languages will be appointed to visit the schools, give lessons in dictation in foreign languages, and otherwise test the power of the pupils to speak the languages they are learning.

A DEPUTATION on behalf of the Roman Catholic claims to the Erasmus Smith Schools' Endowment—one of the very few endowments, other than that of the intermediate system, for education in Ireland—waited on the Chief Secretary last month to request that a new tribunal should be appointed to decide to whom the endowment should go. Erasmus Smith, one of the "adventurers" who in the seventeenth century obtained large estates in Ireland, founded several schools for the benefit of his tenants' children, and left an endowment to support them of something over £10,000 a year. The children were to be brought up strictly as Protestants, and taught Archbishop Usher's catechism. The tenants, however, were almost all Roman Catholics, and refused to attend such Protestant schools; in consequence of which the fund, diverted from its original purpose, has been, and is, spent in various Protestant schools (two of which are in Dublin) attended by children from any part of Ireland, the Erasmus Smith tenants receiving no benefit.

THE Educational Endowments Commission of 1885, unable to decide the question, referred it to two eminent judges. Judge O'Brien, a Roman Catholic, decided that the special intention of the founder was to benefit his tenants, that he merely submitted to the penal laws of the time in arranging for Protestant teaching, and that therefore the whole of the endowment should go to supply to the tenants—Roman Catholics—education which they can accept. The other judge, Lord Justice Fitzgibbon, a Protestant, held that the evidence was conclusive that Erasmus Smith specially wanted to educate children as Protestants. In this deadlock, nothing was done, and the endowment (which has been much wasted in the past) has continued to be spent on Protestant schools.

CURRENT HISTORY.

THERE is but one event this month in "current history." The Queen is dead. The words are short, but the significance of them is great. Coming just after we had experienced the passing away of the nineteenth century, we are reminded of the simple, majestic words with which the author of the book of Exodus introduces his dramatic narrative: "And Joseph died, and all his brethren, and all that generation . . . . And there arose a new king." Those of us who are in the "prime of life" feel in a measure as if we had lost our home. The old familiar ways of thought and speech are falling in ruin around us, and at present our thought is that we shall never be quite "at home" in the twentieth century and in the reign of "Edward VII." We are like the old men of Ezra iii. The "people are shouting with a great shout, but many of the ancient men that had seen the first house wept with a loud voice." We cannot as yet "frame to pronounce right" the new National Anthem.

QUEEN VICTORIA has died at the beginning of the twentieth century. Her great ancestor and predecessor, Alfred, King of the West Saxons, died at the beginning of the tenth. And even if there were no proposal to celebrate the thousandth anniversary (according to the generally accepted view) of Alfred's passing, our thoughts would naturally turn in our own grief to the mourners of the old-world age. How many parallels, how many contrasts, could we profitably draw from a comparison of the two careers! Alfred sent an embassy to India, his descendant rules directly over millions of inhabitants of that distant land, and his influence indirectly affects the welfare of all its peoples. Alfred was the founder of our naval strength, the representatives of which have so lately stretched from shore to shore to escort our Sovereign to her last resting-place. Alfred was pre-eminently a Christian, and could make no peace with Guthrum, could allow no Danish followers of his to settle in the island realm, unless they were first baptised. Victoria, though Christian too, has learned to rule over millions of Mohammedans and Hindus, as well as over part of a divided Christendom. Neither Alfred nor Victoria was Sovereign "of the English," but whereas his title was only "of West Saxons," Victoria's was "of Great Britain and Ireland," and "of India." How it helps to fill out the idea of the thousand years to think that the "Kingdom of England" has risen and ceased to be in the interval.

"THE Queen is dead! God save the King!" Our new sovereign is to be known as King Edward, and we all approve both the name and the motive which led him to choose it. For this generation, truly, there is but one Albert—Albert the Good, of blessed memory. But why Edward *the Seventh*, unless indeed England is so much the "predominant partner" that the "Kingdom of Great Britain and Ireland" is but a continuation of the "Kingdom of England," which in the opinion of Lord Bacon, as expressed in his essay "Of Prophecies," came to an end in 1603, and which certainly ended in 1707. The Scots have never before had a King Edward, and the Irish have had but one, him whom we in England knew as Edward VI. His Majesty, therefore, cannot well be Edward VII. north of the Tweed nor across the Irish Channel. Let us take a contrast from the family whose representative, the German Emperor, is now mourning with us. His ancestor, Frederick II. of Prussia, is well known to us. But there are two other Frederick II.'s in that family. When they ruled only in Nürnberg in the Middle Ages, there was a Frederick II., Burggraf of Nürnberg. When, in the fifteenth century, these Burggraves came into possession of the Mark-graviate of Brandenburg, they began numbering again, and soon there was a Frederick II. of Brandenburg, Elector of the Holy Roman Empire. At the dawn of the eighteenth century, they added to their Mark-graviate the "Kingdom of Prussia," and again recommenced their numbering. They produced in time the eighteenth-century hero whose kingcraft Carlyle presented to English-speaking readers. We, therefore, respectfully submit that our present sovereign is not the *Seventh*, but the First Edward of the kingdom over which he rules.

BUT indeed, the numbering of our Edwards has long been illogical. Alfred's son and successor is called Edward I. (unless we follow Prof. Freeman, and spell it Eadward). Edward II.'s date is 975-8, and Edward III. is the well-known Edward the Confessor, who built Westminster Abbey and brought in the Normans. But when next we had a King Edward, it had become the fashion to reckon "after the (Norman) Conquest," and though the conqueror of Wales and Scotland was as English as could well be desired, he or the historians ignored the first three Edwards, and without any change of style (for certainly Edward II. and III. had been "Kings of the English") began the counting over again. But now that a change of style *has* come about and been established nigh two centuries, if not three, that change is apparently ignored, and Edward VI. of England is succeeded, *longo intervallo*, by Edward VII. of the "United Kingdom of Great Britain and Ireland."

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ENGLISH PREPARATORY SCHOOLS.[1]

ENGLISH Preparatory Schools hold an anomalous position. Whilst most secondary schools for older boys are endowed schools, founded under some ancient deed of gift or new charter, the preparatory schools are private ventures. It will surprise most readers of this volume to find that there is no evidence for the existence of a school of this type before the year 1837; and their growth is ascribed by Mr. Cotterill, who deals with the historical part, to the influence of Thomas Arnold. Now there are 280 represented on the sectional Association, and there must be large numbers not so represented. These schools exist simply and solely to feed the public schools; in their organisation and curriculum, therefore, we shall find a sidelight on the effects of public-school education.

The first thing we note is that the teaching in these schools, or the best of them at least, is above the average. Depending as they do on success for their very existence, they are bound to sift out incompetent masters, and they do so. We offer no opinion here on the important question, whether the men who best carry on the work of these schools are the best teachers from an ideal point of view. We wish to imply only that the men who cannot do the work they are set to do have to go. This work is exacting, and the masters are practically at it from dawn to long past dewy eve. And yet, as Mr. Cotterill points out, their prospects of advancement, even of winning a salary large enough to marry upon, are small, and still dwindling. He recommends that successful assistants should be more often made headmasters of the school to which they belong. We may add, that when a preparatory-school master gets on the staff of a public school, he is generally one of the best men there within certain limits; but he has very definite limits, as men with a really good degree prefer to begin elsewhere. This speaks well for the thoroughness of preparatory schools, and incidentally *proves that it is possible to train teachers.*

The second point we note is that the curriculum is faulty in defect and in excess. Not that these schools are to blame for either. Their scheme has to be arranged to suit public-school open scholarships, and in particular, the scholarships of Winchester and Eton, with Rugby as a good third, which are the schools whose names tell in the public mind. There is consequently too much specialising, and too little English, history, and geography. There is also a tendency to force promising boys, and in some schools the result is that less promising boys are often neglected. Mr. C. C. Lynam, who takes this topic, points out the harm which is done because too little weight is given to general knowledge, and because *viva voce* tests are not used. It is difficult to speak too strongly of the vicious effects of open scholarships on the education of this country, and we are glad to see that the point is again insisted on here.

All the subjects of school instruction are taken in turn, and each dealt with by a competent person. Much may be learnt from these essays, but we have no space to dwell on them here. We should like to point out one or two serious omissions.

First, it is not sufficiently understood that school efficiency depends largely on what Thring called "the almighty wall." There should have been a section devoted to the school buildings in their effect not only on health but on discipline and general efficiency. We should expect an examination of what educational plant is necessary in a good school, the pictures and models, the blackboards, and other aids to the teacher. And secondly, not only singing and music ought to be properly taught, but the art of speaking clearly. How many times in an hour has the weary schoolmaster to tell boys to speak out! And public-school boys, from the bottom to the top, do not know the difference between the mumble and the shout. It is easy to teach the young how to breathe, to speak clearly, to read with expression; at a later age it is always difficult, often impossible. The standard of elocution is higher in a Board school than it is in a public school. Once more we do not blame the preparatory school who ly for this, but in part we do. It is, however, one of the many things which make us long for an intelligent Headmasters' Conference.

In conclusion, we cordially recommend this volume to all teachers. They will put it down wiser than they were before reading it, and, it is to be hoped, they will try to find some means of enabling these praiseworthy institutions to do their work better. The full organisation of secondary education which we look for, not without misgiving, must take account of these schools; and we agree with the report in thinking that their vested interests must not be carelessly set aside.

[1] *Board of Education. Special Reports on Educational Subjects.* Volume 6. Preparatory Schools for Boys, their place in English Secondary Education. 531 pp. (Eyre and Spottiswoode. 2s. 3½d.

FOR THE SPEECH DAY.[1]

THERE can be no reasonable doubt that this somewhat bulky but extraordinarily complete and representative volume will prove exceptionally acceptable and useful, and coming as it does from Eton, it bids fair on every ground to immediately assume a position of authority. To the majority of teachers it will be found to fulfil a great service in saving both time and trouble often spent in hunting out a judicious selection of passages for "speech day" and other great academical occasions; and what labour this can entail nobody knows so well as those who have ever been responsible for such a task. Many a man who has all the matter of his particular subject in a competent and able grasp is, nevertheless, nonplussed in making such a selection, and by consequence the tendency to fall back upon venerable but hackneyed passages is one which it is difficult to overcome.

The present selection is therefore as welcome as it is praiseworthy, and considering the dearth of manuals for this purpose, it is as unique as it is careful. The compiler modestly disclaims any pretensions to completeness in this volume, but it is certainly full enough for all reasonable requirements; and as the "Upper School" speeches at Eton since 1885 have been copiously drawn upon, the fullest resources of academical good taste may be assured to those who use it. Perhaps the most remarkable of all the features of this volume is its polyglot character. Separate sections deal (though not with equal exhaustiveness) with the literatures of Greece, Rome, England, France, Germany and Italy; and a reviewer cannot but recall Charles Lamb's famous passage of self-congratulation: "I bless my stars for a taste so catholic, so unexcluding. Shaftesbury is not too genteel for me, nor Jonathan Wild too low."

A glance at the table of contents displays the dead languages secure in the first place, but as this section only extends to sixty-two pages, not even the most militant "modern" can feel aggrieved. Mr. Cornish, however, groups the Greek selections under the head of Classics, and all the rest under the designation "Latin," which seems a somewhat unfair restriction of the former term, even if it does not detract from the significance of the latter. Under these two heads he has quoted some passages at length, and a large number of others he indicates by the number of the line to commence and the word to finish with. By this means a great deal of space is saved without any sacrifice of completeness, so far as the thoroughly representative character of the section is to be understood. Plato is not represented at all, and the selection from Cicero is singularly modest. Theocritus is also left out, though Catullus' "Lament for Ariadne" is included. None of the selections from Aristophanes are given in full, and only a few from Virgil; but an interesting selection of speeches from Livy and also from

[1] "The Public School Speaker." Compiled by F. W. Cornish, M.A. 570 pp. (John Murray.) 7s. 6d.

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Tacitus are printed at length. A selection from Lucretius is as judicious as it is welcome.

The classical section over and done with, Mr. Cornish turns mainly to the literature of England, and devotes to it no less than three hundred and eighty-four pages, which he divides into sub-sections, respectively dramatic, poetical and oratorical. Of this great division of the work it must be noted that America figures largely in it, and that while Scotland and Ireland are not left unrepresented, a slightly larger Irish leaven might conceivably have been introduced. So far as Irish eloquence goes, the supply is adequate and even generous, but the work of poets who have been Irishmen suffers by the exclusion of (at least) Thomas Moore; and there are, one thinks, no few who can find, and express, more pathos and charm in much Irish verse than the most brilliant orators of Erin could ever put into speeches intended for the senate or the bar.

In the dramatic section are included many old favourites, but the compiler has also gone to less known sources for very effective selections. A purely literary charm attaches to many of these from their unusual position, and to have included parts of Byron's often slighted plays, a selection from a little-known work of Thomas Hood and another from Thackeray, while by no means ignoring the claims of the lesser Elizabethans, is an evidence of the fine discrimination of the compiler's taste. Among these latter Nicholas Udall's "Ralph Roister Doister" is lifted into unaccustomed prominence.

Of the poetical section it is almost impossible to speak too highly, although space does not serve for any detailed account of it. It is almost an anthology in itself, and contains much work that is comparatively little known. If the breadth of Mr. W. E. Henley's recent collection, which includes everybody from the prophet Ezekiel to Charles Lamb, be somewhat (and necessarily) wanting, still Charles Lamb is here. So, too, are solemn Dr. Johnson (who surely missed the function of prophecy by only a short distance) and moderns like Mr. Rudyard Kipling and Mr. Henry Newbolt. The serious tone of most of the American selections is admirably set off by the lighter veins of Praed and Smollet, and James and Horace Smith are cheek by jowl with Walt Whitman. This section tempts the most conscientious critic to be diffuse, so full is it of good things. These, however, are for those who use the volume rather than for one who only feels constrained to praise it. Much also might be reasonably said of the orations which conclude the English section. Lord Strafford and Richard Lalor Sheil, Lawrence Sterne and John Milton have all been drawn upon, adding a leaven of the unaccustomed to selections brilliantly headed by names of more commanding weight. The inclusion of a part of Abraham Lincoln's second inaugural address is as happy as it is significant.

Concerning the French, German and Italian sections, it is perhaps now unnecessary to say much. The same liberal spirit and careful discrimination are to be observed in the selection of authors and passages as hitherto. Molière gets his full share of space, and Mons. Rostand and Scribe are included with Théodore de Banville and André Chenier in a division where, undoubtedly, the task of exclusion has been as difficult as that of comprehensive inclusion. Schiller and Goethe divide the honours of the German selection, where however, Heine is only represented by a single lyric. Among the Italian writers moderns like Leopardi and Manzoni are found side by side with Politian and Berni, and hardly overshadowed by the necessary prominence of Dante and Petrarch. It is, perhaps, obvious that a volume of such range and scholarship can scarcely be dealt with in a short review. Equally, its best praise will be found in its wide acceptance and frequent use. The charm of its pages grows upon even a casual reader; the value of its purpose ought to secure it enthusiastic recognition; and the dignity and taste of its selections will contribute to the advancement of literature.

COMENIUS AND REFORM.[1]

IT may seem ungracious to begin a notice of this book by saying that other historical work would seem to claim precedence over the subject of Comenius. Yet it is undeniable that we have in Prof. S. S. Laurie's "Comenius" a very satisfactory book for the English reader desirous to know the views of Comenius without wading through those 2,271 pages of his views in Latin, to the perusal of which Prof. Laurie so plaintively refers. Of other educational writers, the forerunners or contemporaries of Comenius, viz., J. L. Vivès, Wolfgang, Ratke (Ratichius), John Valentine Andreae, John Henry Alsted, we know of no adequate account in English. It would be a great service to have an essay on Vivès or Ratke. We could have felt this even when Mr. M. W. Keatinge published his translation of Comenius's Great Didactic, with the very interesting biographical and historical introductions. But Mr. Monroe's work necessarily takes us over much of the ground for a third time. In saying this, however, we have no desire to belittle Prof. Monroe s book. It is a conscientious and valuable contribution in itself, and were it not for the previous works of Dr. Laurie and Mr. Keatinge such a book would be essential. It has, too, individual excellencies and supplementary information. Still we regret that there is not more division of labour amongst historical workers, so as to bring together accounts of educationists inaccessible to the ordinary English reader.

Having now said what seemed necessary to say, perhaps we may state the points in which Prof. Monroe's book is supplementary to these writers. His account of European education in the century preceding Comenius — the transition from humanism to realism—gives a sketch of Vivès, slight enough, it is true, but for which we are thankful. Comenius's treatment of the earliest education of the child is a valuable chapter, as we should expect from the fact that Prof. Monroe has edited Comenius's "School of Infancy"—an excellent piece of work—which places Mr. Monroe's reputation high amongst our historical educational writers. Then, too, Prof. Monroe's account of the influence of Comenius on modern educators, from Francke to Herbart, is a distinct contribution to the English treatment of the subject. And best, perhaps, of all is the chapter on the permanent influence of Comenius, which shows the English reader the place which Comenius occupies in contemporary German thought, a matter about which the English reader is usually very ignorant. Prof. Monroe's Appendices are highly useful, giving a bibliography carefully selected. Perhaps it may now be added that, valuable as the bibliography is, anyone seeking a still more complete one will find it most thoroughly prepared and ready for use in Prof. Monroe's edition of "Comenius's School of Infancy," already referred to.

In regard to the book as a whole, it should be said that it is very readable, and it is distinctly written with a knowledge of recent German educational thought. It is clear and concise in style, and written with enthusiaam. There is, we venture to think, one point on which none of the three writers we have mentioned—Prof. Monroe, Prof. Laurie, and Mr. Keatinge—have written quite adequately, viz., the educational importance of Thomas Campanella. In his "City of the Sun," a work all too little known, Campanella suggests the utilisation of the walls of the city and public buildings, making a length of over seven miles, reserving them for plain and vivid drawings of the stars and solar system, of the earth, of the countries of the earth with their histories, customs, and laws written very concisely, of all animals and plants, most beautifully and vividly painted, and, in fact, the whole encyclopædia of knowledge *visually* displayed. The education of children would thus be easily accomplished by taking them to walk round the walls under

[1] "Comenius and the Beginnings of Educational Reform." By Professor Will S. Monroe, A.B. (Heinemann.)

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competent guidance and instruction. Surely, here we have an *orbis pictus*, which Comenius himself cannot be said to have outvied. A description of the *Civitas Solis* might well, therefore, find a place in the historical introductions to the books on Comenius.

RECENT SCHOOL BOOKS.

Modern Languages.

André Laurie, Une Année de Collège à Paris. Adapted and edited by Fabian Ware; Notes and Vocabulary by C. H. S. Brereton. xvi. + 168 pp. (Macmillan.) 2*s*.—This text is happily chosen; it tells in an attractive form and in good French the experiences of some French schoolboys. A careful teacher will be able to spend many an interesting hour if he reads this book in class. It has been skilfully brought within the limits of a term's work, and has been carefully annotated. The vocabulary is practically complete, as far as we have been able to test it. The general editors of the series (Siepmann's) have as usual supplied appendices, containing words, phrases and passages for retranslation, the teachers' key to which has already appeared.

Louis Enault, Le Chien du Capitaine. Edited by Margaret de G. Verrall. vii. + 172 pp. (Cambridge University Press.) 2*s*.—This tale may be recommended as thoroughly suitable for an intermediate class. The scene of it is a little French seaport; the characters are a retired sea-captain, his young wife, and the captain's dog, which makes up for its ugliness by giving frequent evidence of almost uncanny intelligence. The tale is brightly and well told, with many humorous touches. The notes have been written with great care; the only suggestion we have to make is that when a phrase in the text is explained, it should be given in full in the note, not merely the first and last words. The vocabulary seems to be complete.

P. Cœur, L'Ame de Beethoven. Edited by De V. Payen-Payne. xxiii. + 23 pp. (Macmillan.) 2*s*.—We have read this text with some interest, but with ever-growing amazement that Mr. Siepmann should have considered it fit to be included in the elementary section of his series. Surely there are plenty of easy texts available, and we are not yet driven to put before children the ravings of a lunatic or an account of a spiritualist *séance*. The notes have been written with great care, and are well put; the vocabulary is practically complete. It is sad to find so capable a teacher as Mr. Payen-Payne wasting his efforts on such material.

French Idioms and Proverbs. By De V. Payen-Payne. viii. + 221 pp. (Nutt.) 3*s*. 6*d*.—We are glad to see that this book is now in its third edition, especially as it has been much enlarged by Mr. Payen-Payne, to whom this work has evidently been a labour of love. It is a valuable book of reference for every French scholar, and may even be recommended to the "general reader" as being full of interest. The renderings are in almost every case happy; often we come across old-fashioned English phrases, embodying the wisdom of common folk in a terse and vigorous form, which for some reason or other have dropped out of the literary language. It is a fascinating field of research, and we trust that many another edition of this book will be called for, so that it may become more and more complete. There is every prospect of its becoming the standard work on the subject.

First French Book, according to the "New" Method. By D. Mackay, M.A., and F. J. Curtis, Ph.D., B.A. xviii. + 343 pp. (Whittaker.) 2*s*. 6*d*. net.—This is a book from which a teacher of modern languages may learn a great deal. It incorporates much of what has been done in recent years to improve the methods of teaching these languages, and the authors are particularly indebted to the German "reformers." The remarks on the teaching of pronunciation show a satisfactory acquaintance with what we may call "school phonetics," and leave little to be desired. The text is carefully graduated and well arranged; much of it being based on a picture which appears in a reduced form in the book, and which is issued as a wall picture at 12*s*. net. There are some features, however, to which we cannot reconcile ourselves. In the first place, we continue to think it an absolute mistake from a pedagogical point of view to print remarks intended only for the teacher in the book which is put into the hands of the pupil. Still more serious is the fact that the English equivalents of the French words are given in the vocabulary, and that in a "First French Book" there are pieces for translation from English into French. This is so completely contrary to the views of the "reformers," that it seriously detracts from the value of the book as an exposition of the "New Method." It is all the more to be regretted as it is an excellent piece of work in other respects. It should be added that the transcription of the *Association Phonétique Internationale* has been used throughout; and that there are some pages of simple songs with music, the introduction of which helps to enliven the teaching and at the same time to improve the pronunciation.

G. Freytag, Die Journalisten. Edited by H. W. Eve, M.A. xix. + 193 pp. (Cambridge University Press.) 2*s*. 6*d*.—There is no need to recommend a comedy which competent critics consider second only to "Minna von Barnhelm" in German literature; and the name of Mr. Eve is a sufficient guarantee that the editorial work is of the highest quality. He has given us an admirable account of the life and work of Freytag, and his notes are full of felicitous renderings and useful suggestions. Even one well acquainted with both languages cannot fail to learn much from Mr. Eve's scholarly commentary.

German Exercises. Book II. By J. F. Stein. vi. + 114 pp. (Edward Arnold.)—We are unacquainted with the author's first book of German exercises, which, according to the preface, has had uninterrupted success for more than twelve years (in America). While recognising that there are some useful remarks in the introduction to this second book, we do not recommend it, as we cannot bring ourselves to approve of the mosaic method of translation on which it rests.

Classics.

In the "Cambridge Series for Schools and Training Colleges" we have this month *Xenophon, Anabasis VI.*, by G. M. Edwards, M.A., xxxv. + 100 pp.; and *Caesar, De Bello Gallico VII.*, by E. S. Shuckburgh, M.A. xix. + 158 pp. (Camb. Univ. Press.) 1*s*. 6*d*. each. We have noticed other books of these authors by the same editors in this series. These two, upon examination, prove to be of equal value with the earlier books, scholarly, and just what this excellent series aims at being, thoroughly useful.

The Preceptors' Latin Reader. By the Rev. E. J. G. Forse, M.A. 134 pp. (Clive.) 1*s*. 6*d*.—Here is another book of selections. The distinguishing feature of this one seems to be the brevity of most of the extracts; there are 210 of less than three lines in Part I. Part II. consists of 16 short pieces preceded by a dissection of each into simple sentences. Part III. contains 144 more advanced prose and verse without any help. There is good variety of material, which will afford plenty of practice. The spelling of words is given correctly in the selections, but in the vocabulary Mr. Forse seems to waver, and admits false forms, either in brackets or with a reference to the correct; thus in one column we find *caelum* (*coelum*), and *caena*, &c., *see cena*, &c. This is a pity, as it suggests wrong forms which otherwise might be, and should be, unknown or forgotten.

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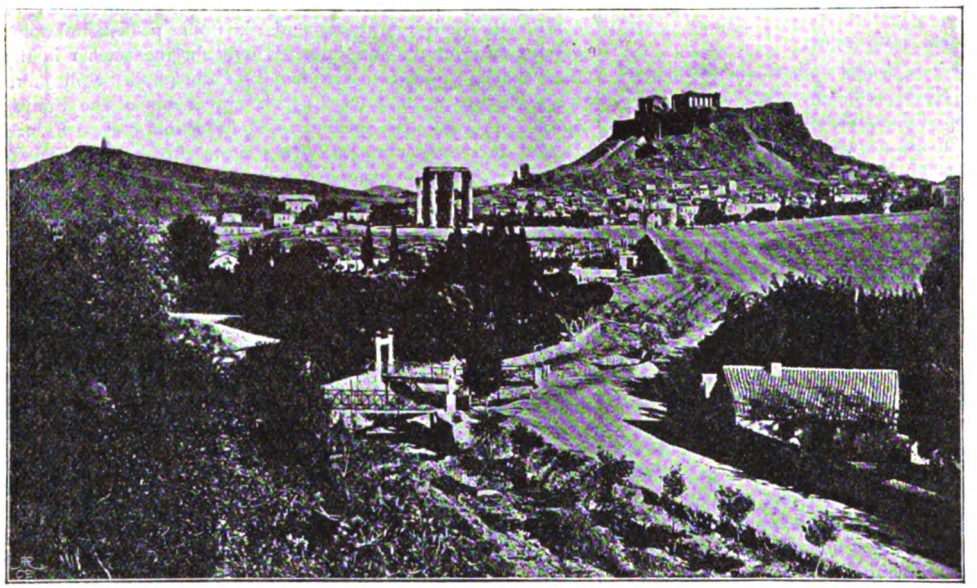
Scalae Tertiae. By E. C. Marchant, M.A. xii. + 120 pp. (Bell.) 1*s.*—The incipient Latin scholar, if he has properly climbed, and not been hastily dragged up, the easy steps of the first two ladders, will be ready to ascend the third here planted for his feet. The editor gives such a helping hand that the effort will not even now be great, though some of the steps now take the verse form. The 59 selections are from Phaedrus, Ovid, Nepos and Cicero, illustrated in the manner to which we are now so well accustomed in the "Elementary Series" of Messrs. Bell. The frontispiece, which we are allowed to reproduce here, is from a very pleasing photograph of Athens.



ATHENS.

Edited Books.

Shakespeare's Henry V. By A. W. Verity. 292 pp. (Pitt Press.) 1*s.* 6*d.*—With so much military ardour as is abroad to-day, this play is not only seasonably edited, but is, by the excellence of Mr. Verity's scholarship and the deft literary craftsmanship exhibited in this volume, likely to prove a standard edition for school purposes. All the elucidatory matter is remarkable for its copiousness, and a careful examination of it discloses the judicious selection which marks its main divisions. In the introduction alone as many points are briefly discussed as would, with only moderate elaboration, furnish an exhaustive literary article upon the play; and the last four sections are full of suggestiveness. The inclusion of an abridgment from Gervinus is especially happy, and the discussion of the political teaching of the play is calculated to give sound and clear notions on this point to those who are, perhaps, no longer boys, whose political education needs considerable enlightenment. The notes are all that Mr. Verity has accustomed us to expect, and the glossary gives more than modern equivalents; it supplies copious explanations of obsolete terms. The appendix will repay study even by advanced scholars, and the "hints" on Shakespeare's metre and vocabulary are likely to prove very fruitful. Altogether, almost as much an edition for a scholar's shelves as for a schoolboy's locker.

Shakespeare's King Lear and Indian Politics. By W. Miller, C.I.E. 115 pp. (Luzac & Co.) 2*s.*—The title of this little brochure is sufficiently startling. One wonders whether before long we may not be treated to disquisitions on the connection between "In Memoriam" and Peter the Great, or on Wordsworth's "Excursion" and Macadamised Roads. Certainly no two subjects could appear to a cursory observer to be farther apart than those which give a title to this little book. But Dr. Miller explains that he has been for years accustomed to teach Shakespeare to Indian students, not merely as a poet nor as a theme for philological studies, but in the widest sense as a philosopher whose work has a broad bearing upon many problems of social life. From this unique point of view a rather unique work has proceeded, and those who are interested in Indian affairs will doubtless find much that is worth attention in these pages. For any student of Shakespeare, likewise, Dr. Miller's work may be found of some value, since it is quite sufficiently clear and thoughtful to be illuminative, and lucid enough to be uncommonly well worth perusal.

De foe's Robinson Crusoe. Part I. By T. H. B. Masterman. 318 pp. (Pitt Press.) 2*s.*—The editing of this volume has, apparently, been a simple and easy matter. Mr. Masterman supplies a short introduction, useful for young pupils, and a rather inconsiderable number of notes which are arranged in small blocks at the bottom of each page. Perhaps a book like "Robinson Crusoe" could not be better treated. Its general popularity excludes all necessity for pedantic elaboration. As a leading daily journal recently remarked, this habit of compression and modesty might be advantageously pursued in even more important instances.

English.

History of the English Language. By T. N. Toller, M.A., iii. + 284 pp. (Cambridge University Press.) 4*s.*—"Hitherto our vulgar tongue has scarcely received the attention it deserves." A fact as lamentable as it is true, and with obvious consequences. There are comparatively few men in England in a position to give an adequate account of the history of their native language. Prof. Toller is one of the few. No better proof could be afforded of his thorough mastery of English in all phases of its development than the production of the work under consideration. It is distinguished by uniform accuracy of information, the spirit of scientific research and a high and just appreciation of the educational value of English. Teachers and students will find in this new book nothing which they will have to unlearn afterwards. That is in itself a great recommendation. But the positive merits of the book are no less noteworthy. Prof. Toller has unduly depreciated his contribution to the study of English in representing it as a mere tracing of outlines. It is much more than that; indeed, the one fault of the book is, we are inclined to think, its too great attention to detail. To write a work of this nature requires, above all, a complete sense of perspective. We think the author would be well advised if, in future editions, he were to reduce the amount of space occupied by illustrative matter. For instance, ten

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consecutive pages consist entirely of lists of the words introduced during the "Second Period" of Latin influence. Instead of this may we suggest, say, a chapter on the economy of sound changes? It would contain the history of such words as "umpire," "number," "orange" and the like. There are singularly few errors, typographical or otherwise; "less" on p. 110 should, perhaps, be *fewer*, and on p. 16 we find the expression "different than."

Elements of Rhetoric and English Composition.—First and Second High-School Courses. By G. F. Carpenter. iv.+283 pp., ii.+140 pp. (The Macmillan Company.) 4s. 6d.—In nothing do our American cousins more completely demonstrate their great superiority in educational matters than in the attention they give to the teaching of English composition. It will probably come as a surprise to teachers in England to hear that their colleagues in America have arrived at an agreement as to the best means of teaching this subject. Mr. Carpenter's book is written to provide for the two years' course that has been adopted. "During the first of these two courses pupils should be trained in the choice of words and the structure of sentences and paragraphs, and during the second course they should be briefly trained in the main principles of exposition, narration and, perhaps, argument." The book is one that every English teacher should have by him. It is exceedingly good.

New Preparatory Atlas. Edited by C. Carter, M.A. 24 maps. (Relfe.) 6d.—A cheap collection of maps, upon which are represented the chief political divisions and the positions of places of importance. There are no physical maps, and the mountain ranges are shown by the conventional thick lines. The maps may prove of service in showing young pupils how countries and cities are situated with reference to one another.

History.

Macaulay. By Sir Richard Jebb, M.P. 59 pp. (Cambridge University Press.) 2s., paper covers 1s.—This is a lecture delivered at Cambridge last summer to the meeting of University Extension students, and printed by request. It makes out the best possible case for Macaulay as a historian. His "English History" is justified from the attacks made upon it, and the mistakes of the Essays are condoned on account of the circumstances of their production. In itself, the lecture is quite worthy of Prof. Jebb's fame.

A Reading Book in Irish History. By P. W. Joyce. 220 pp. (Longmans.) 1s. 6d.—An excellent and most interesting little work, written out of the wealth of a master of the subject. Delightful in itself both for children and for "the older persons" whom Dr. Joyce rightly anticipates as among his readers, it will surely induce many to read the other works of the author to which he occasionally refers us. It consists of chapters on the earliest Irish history and of long extracts from some of the best Irish legends. It is illustrated with pictures of works of Irish art and contains chapters on old customs and old Irish music. We warmly recommend it to all our readers.

Science and Technology.

Text-Book of Zoology treated from a biological standpoint. By Dr. Otto Schmeil. Translated from the German by R. Rosenstock, M.A., and edited by J. T. Cunningham, M.A. Part III.—Invertebrates. viii. + 186 pp. (A. & C. Black.) 3s. 6d.—Attention has already been directed in these columns, when noticing the previous parts of this text-book, to the characters which distinguish this treatise on zoology. This third part, on invertebrate life, completes the work. The contents of this concluding section will take a less familiar aspect to the general reader. He has, as a rule, the vaguest notions of the nature of the arthropoda, mollusca, echinodermata, and cœlenterata; but after a study of this well illustrated volume his views on these divisions of the animal kingdom should become clear and well ordered.

Botany: An Elementary Text for Schools. By L. H. Bailey. xiv.+355 pp. Illustrated. (The Macmillan Company.) 6s.—Judging from the number of botanical text-books recently published, the science of botany is being more widely taught: this is as it should be, for, provided instruction is properly given, there are few subjects of greater educational value. Prof. Bailey's last book is extremely good, and most probably will be used widely. The preface consists of "paragraphs for the teacher," many of which are excellent. It is to be hoped that the instructor will follow them out. It may not be out of place to quote a few. "The youth is by nature a generalist. He should not be forced to be a specialist . . . . The book should be a guide to the plant; the plant should not be a guide to the book. Botany always should be taught by the laboratory method; that is, the pupil should work out the subjects directly from the specimens themselves." The amount of ground covered is somewhat large. Part I. deals with the "plant itself," and enters into the principles of morphology, physiology, reproduction and biology. The second section considers the plant in relation to its environment, and discusses many interesting features of plant life, including variation and its results. Part III. describes the minute anatomy of plants. We notice that the old-fashioned collodion method of embedding is given. The use of xylol and paraffin is a more satisfactory way, and is to be recommended. Again, the use of safranin as a stain for lignified tissue gives excellent results when used in conjunction with haematoxylin. The author does not appear to advocate its use. The last portion of the work is occupied by classification. The illustrations form one of the most prominent features of the book. There are over 500 figures, very many of which are from photographs and reach a high degree of excellence. The get-up of the volume leaves very little to be desired; paper and print are both very good, and the binding is tasteful. The book is, however, rather weighty.

One Thousand Problems in Physics. By W. H. Snyder and I. O. Palmery. 142 pp. (Edward Arnold.)—This is a well-graduated collection of questions suitable for secondary schools. The compilers are experienced American teachers, and are familiar with the requirements and limitations of boys and girls. The questions at the end of the book from the Admission Examination of Harvard College will prove particularly interesting as providing a means of comparison between British and American standards for undergraduates.

Miscellaneous.

Winchester. By R. Townsend Warner. With 46 illustrations. (Bell's Public School Handbooks.) 3s. 6d.—There is more excuse for a Winchester handbook than there is for some of Bell's series, which do little more than boil down the researches of other writers. So many are the books on Winchester, so long and interesting its history, that the literary middleman is useful. And indeed, this book has a claim to exist for another reason. It is meant to be a faithful picture of Winchester as it is, and describes in great detail the life of the present day; moreover, it gives information such as is likely to be useful to the parent who thinks of sending his son to the great school. The historical part is very briefly sketched, too briefly indeed; for although a list of important dates and events is given, there is no list of headmasters. In spite of his many predecessors, however, Mr. Warner has found something new to print in the shape of several letters from the Verney MSS., which throw light on school life under the Stuarts. A description of school, "from a small commoner's point of view," is also distinctly original. One other

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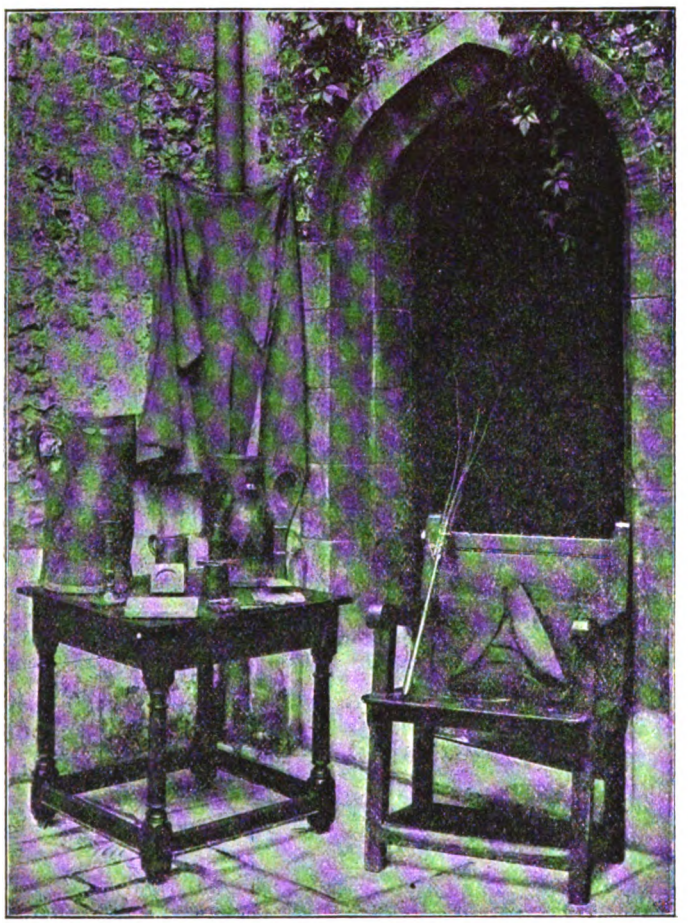
point of importance is the date of the famous Latin poem about Winchester, which is usually assigned to 1550. Mr. Warner, following a writer in the school magazine, places this a century later, but he ought to have given his reasons. We cannot discuss the subjects of this book in detail, interesting as they are; but we would call attention to the wisdom of such a venerable foundation in having a museum of relics. Some of these are figured in the plate we reproduce here: the black-jacks, long ago familiar with "swipes," or "Warden's ale," or



From the Winchester School Museum of Relics.

"huff," now reposing high and dry beside ancient birches, candlesticks, and a buff jerkin which they perchance once helped to fill. The famous "notions" are here analysed and in part explained. As for Winchester football, a masterful attempt is made to describe it, but to those who know it not the game is hardly describable. One thing we must mention which is surely unique. There are other ancient and stately schools in England, others which, like Winchester, have played a part in the national history; but we doubt if anywhere else was ever given in alms half-a-crown at the gate to a Greek Archbishop. The index is very inadequate.

The Three Friends: a story of Rugby in the 'Forties. By A. G. Butler, M.A. (Froude.) 3*s.*—This story, "hovering between fiction and fact," is very welcome to all interested in Rugby. It describes a period of which little has been written, the "aftermath" of the Golden Age. The story is simply told, and does not attempt to rival "Tom Brown," but the enthusiasms and trials of boy life are clearly described, and the three friends are fairly well characterised. To those who know who are meant the book will be deeply interesting, but it would interest even an outsider to read the sketches of Tait and of Mat Arnold. We see Tait, though as less heroic perhaps than he is meant to be; but the picture of Arnold, lounging in an easy-chair with all the biggest strawberries on his plate, or uttering whimsical epigrams, is a masterpiece in its way. We can cordially recommend the book.

School Management and Methods of Instruction. By George Collar, B.A., B.Sc., and Charles W. Crook, B.A., B.Sc. viii. + 336 pp. (Macmillan.) 3*s.* 6*d.*—The authors of this attractive guide to teaching have lofty views of the schoolmaster's responsibilities. The excellent tone which pervades the chapters on "Organisation," "Discipline," and "General Principles" cannot fail to have an elevating effect on the young neophyte. "Sincerity of purpose should permeate all schoolwork" (p. 33). "In the eyes of the pupil his (the head teacher's) authority is supreme, and he is the model of justice and truth" (p. 54). "One of the great effects of the training of a good school is the gradual development of this idea of duty for duty's sake . . . . the child has not been educated unless this idea guides his future actions" (p. 56). These are, of course, the sentiments of all true educators, and it is only because it is so often alleged that no such ideas govern the work of our elementary teachers that attention is here directed to them as taking a prominent place in a book intended specially for the use of beginners in public elementary schools. Ten chapters of the book are devoted to a formal consideration of how the chief school subjects should be presented to children. If any two teachers could be expected to be able to write authoritatively on the best methods of teaching subjects as various as spelling, geography, French, and geometry, the authors of the treatise before us might be. But there is a limitation to human capabilities, and more value is to be attached to a collection of essays by specialists acquainted with the peculiar needs of the class-room, brought together and arranged by an editor of wide and varied experience. At the same time, we heartily recommend this volume to acting teachers as well as to students in training.

SENIOR OXFORD LOCAL EXAMINATION, JULY, 1901

Revision Tests.—No. 1.

The following papers are the first of two in each of the subjects dealt with; the second tests will appear in the June number.

Arithmetic.

(*Pass Paper.*)

(1) Reduce to its lowest terms $\frac{519}{1003}$. Show how you can tell by inspection whether, if the fraction be converted into a decimal, the decimal will terminate or recur.

(2) Multiply the sum of $3\frac{1}{4}$ and $4\frac{3}{5}$ by $2\frac{2}{11}$; divide your result by the difference between $9\frac{1}{5}$ and $2\frac{33}{40}$.

(3) Add together ·37, ·0245, 4·101738.

(4) Find, by Practice, the charge for carrying 27 tons 3 cwt. 2 qrs. 25 lbs. of goods at the rate of 17s. 6d. per ton. Give your answer correct to the nearest penny.

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(5) The cost of paving a pathway, 4 feet wide, which surrounds a rectangular plot of grass, 9 yards long, is £22 15s.; if the average cost be 1s. 3d. per square foot, what is the width of the plot of grass?

(6) A man, who is paid at the rate of 1s. 4d. an hour, should receive £1 6s. 8d. for a piece of work; he is joined by a second workman who works half as fast again as the former and for their joint work they receive £1 4s. 8d.; how much should the second receive if he were to do the work unaided?

(7) A sum of £220 8s. 4d. is collected amongst the members of a society; if each member gives as many pence as there are members, how many members are there and how much does each give?

(8) Find, to the nearest penny, the difference between the Compound Interest on £3,154 for 2 years at 3 per cent., and for 3 years at 2 per cent. per annum.

(9) A man holds £5,000 stock in the 2¾ per cents., when the price is 87; how much of the stock must he sell out for reinvestment in 4½ per cent. stock at 108 that his income may be increased by £21?

(10) A dealer, if he sold a certain article for 4s. 10½d. would lose 9 per cent.; at what price must the article be marked that he may gain 12 per cent., and at the same time give 10 per cent. discount on the marked price?

What would be his total gain or loss on 21 articles if one article out of seven was spoiled and had to be sold at half the marked price, without discount?

Answers.

(1) $\frac{3}{11}$. (2) 17; 2⅔. (3) 4·5. (4) £23 15s. 8d. (5) 10½ ft. (6) £1 3s. 4d. (7) 230; £1 19s. 2d. (8) 19s. 5d. (9) £2,400. (10) 6s. 8d.; gains 5s. 6d.

English Grammar and Analysis.

(1) Analyse the following passage:—

I spoke of war to come and many deaths,
And she replied, her duty was to speak,
And duty, duty, clear of consequences.
I grew discouraged, sir, but since I knew
No rock so hard but that a little wave
May beat admission in a thousand years,
I recommenced: "Decide not ere you pause."

(2) Explain and illustrate the terms:—phonology, solecism, synonym, verbiage, euphony.

(3) Parse fully the words in italics below:—

Seeing is *believing*. *Thank* you.
It is *but* folly. *Methinks* you speak *true*.

(4) Prove that vowel-change is not the decisive mark of the strong conjugation. To which conjugation belong these verbs:—bring, fight, beseech, go?

(5) Illustrate the various uses of the word *that*.

(6) Distinguish carefully between conjunctive adverbs and conjunctions.

(7) Explain the uses of the gerundial infinitive.

(8) Discuss the syntax of the following sentences:—Neither you nor I am right. Whom do you say that he is? Man never is, but always to be blest. I dared not meet him. I had rather not go back again. They were both tired of one another.

English History, 1399-1603.

1399-1509.

Not more than five questions to be attempted, of which one must be Q. 6.

(1) Who were the Lollards? Trace their history during the early part of the Lancastrian period.

(2) State (*a*) Henry V.'s, (*b*) Henry VI.'s claims to the French crown. Account for the comparative success of the former, and for the failure of the latter in the French War.

(3) Exemplify and account for the importance of the families of Beaufort and Neville during the fifteenth century.

(4) Compare and contrast the Lancastrian Restorations of 1471 and 1485.

(5) Trace and account for the relations between England and "Burgundy" during the fifteenth century, showing that you know the meaning of the latter term.

(6) State the position and historical importance (during this period) of the following places:—*Beaugé, Brittany, Crevant, Drogheda, Estaples, Hexham, The Pale, Normandy, Tewkesbury, Verneueil.*

Henry V.

(1) Explain, with reference to the context, the following passages:—

It is not well done, mark you now, to take tales out of my mouth, ere it is made an end and finished. I speak but in the figures and comparisons of it.

I knew there was but one way, for his nose was as sharp as a pen, and 'a babbled of green fields.

The strawberry grows underneath the nettle,
And wholesome berries thrive and ripen best,
Neighboured by fruit of baser quality.

If you grow foul with me, Pistol, I will scour you with my rapier.

(2) Show how many of the minor characters are used to bring out characteristics of Henry's leadership, or of the English army as a whole.

(3) Describe, and criticise the injustice of, the arguments used by the Archbishop of Canterbury to convince Henry of his right to make war on France.

(4) Explain the following words and phrases:—boot, orisons, show us the mettle of your pasture, sconce, it sorts well with your fierceness, farced, scambling, ancient, lavoltas, firk, whiffler, legerity.

(5) What is the reason for the use of choruses before the acts?

Merchant of Venice.

(1) Of what different stories did Shakespeare make use in this play, and whence did he obtain them?

(2) Explain, with reference to the context, the following passages:—

Let it presage the ruin of your love,
And be my vantage to exclaim on you.

The devil can cite Scripture for his purpose.

Therefore the poet
Did feign that Orpheus drew trees, stones and floods.

He makes a swan-like end,
Fading in music.

He is a proper man's picture; but, alas! who can converse with a dumb show?

(3) Who were:—Alcides, Cato's daughter, Midas, Barrabas, Cressid, Thisbe? In what connection are they mentioned here?

(4) Explain:—cater-cousins, sad ostent, patines, usance, Erebus, respective, wealthy Andrew, Hyrcanian, Phill-horse.

(5) Write a note on the character of Shylock.

(6) Describe and criticise Shakespeare's attitude to (*a*) usury, (*b*) Jews.

Childe Harold: Canto III.

(1) To what does Byron attribute Napoleon's fall? In what respects did he consider that he resembled Napoleon?

(2) Give, in your own words, Byron's description of Rousseau. How far is it adequate?

(3) What thoughts are suggested to the poet by the sight of (*a*) the field of Waterloo, (*b*) the Alps?

(4) Explain, in reference to the context, and give any allusions contained in, the following passages:—

Had I not filed my mind, which thus itself subdued.

Sapping a solemn creed with solemn sneer;—
The lord of irony, that master-spell
Which stung his foes to wrath.

This makes the mad men who have made men mad
By their contagion!

The part of Philip's son was thine, not then
(Unless aside thy purple had been thrown),
Like stern Diogenes, to mock at men.

What want these outlaws conquerors should have
But History's purchased page?

(5) What do you know of:—Marceau, Ferney, Brunswick, Ehrenbreitstein, Harmodius, Drachenfels, Julia Alpinula, Murat?

(6) Explain the following words and phrases:—blazon, Stygian coast, pride of place, Sorrow's most detested fruit, sheen, Cytherea's zone, Chaldean, pibroch.

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Geography.

GENERAL PAPER.

(1) What are the causes of ocean currents?

Give an account of the Japanese current, and explain its importance to the people of the Aleutian Islands.

(2) How do you account for:—The blue appearance of the sky; the absence of tides in the centre of the North Sea; the trade winds?

(3) What are the principal areas of greatest rainfall? Give the causes in each case.

(4) Whence does Great Britain obtain its chief supplies of:—Indigo, cork, mahogany, nitre, esparto grass, lemons, india-rubber?

(5) By what routes is it possible to go from London to Calcutta? Describe one of them.

(6) Explain the importance of the Danube as a commercial highway.

(7) Give the boundaries of the Chinese Empire. Name the ports in which each of the Great Powers is most interested.

(8) Where are the following, and for what are they noted:—Candahar, Yucatan, Lima, Sadowa, Brindisi, Kiel?

(9) Describe the extent and physical features of the Himalayas.

French.

(1) Translate into English:—

(*a*) Mon âme, me disais-je, est tout d'une pièce; elle ne peut se prêter à aucun partage: il faut qu'elle se donne ou se refuse toute entière: elle n'a le choix qu'entre le trop-plein des affections violentes ou le vide de l'indifférence. C'est que je suis à la fois raisonnable et passionnée; trop raisonnable pour m'aveugler sur rien, trop passionnée pour me contenter de peu.

(*b*) Le prisonnier suivit son conducteur, qui le conduisit effectivement dans une salle presque souterraine, dont les murailles nues et suantes semblaient imprégnées d'une vapeur de larmes. Une espèce de lampion posé sur un escabeau, et dont la mêche, nageait dans une graisse fétide, illuminait les parois lustrées de cet affreux séjour, et montrait à Dantès son conducteur espèce de geôlier subalterne, mal vêtu et de basse mine.

(2) Turn into French:—

At my coming to London, it was some time before I could settle myself in a house to my liking. I was forced to quit my first lodgings by reason of an officious landlady that would be asking me every morning how I had slept. I then fell into an honest family, and lived very happy for above a week, when my landlord, who was a jolly, good-natured man, took it into his head that I wanted company, and therefore would frequently come into my chamber to keep me from being alone.

(3) State, with examples, the rules for the agreement of past participles in French.

(4) Write down with their meanings the French indefinite pronouns.

(5) How is the feminine form of the possessive pronoun *son* written before a vowel? Why not *s'*? Distinguish between *ma propre main* and *ma main propre*; and between *l'âne même*, *le même âne*, and *même l'âne*.

(6) Give the participles of *vivre*, *voir*, *venir*, *devoir*, *s'asseoir*, *prendre*.

(7) Put into French: (*a*) To return to our subject; (*b*) a wholesale and retail dealer; (*c*) to be at the last gasp; (*d*) ladies first; (*e*) he has not acknowledged the receipt of my letter.

Euclid.

BOOKS I.-IV.

A.

(1) P is any point in the straight line AB, and from P straight lines PC, PD are drawn on opposite sides of AB; show that if the angles CPA, DPA together equal two right angles, CPD is a straight line.

(2) If a straight line falls across two parallel straight lines it makes the alternate angles equal, the exterior angle equal to the interior and opposite angle on the same side of the line, and the two interior angles on the same side of the line together equal to two right angles.

(3) BC is a straight line bisected at A and divided unequally at D; show that the difference of the squares on BA and AD is equal to the rectangle contained by BD and DC.

(4) The straight line bisecting any chord of a circle at right angles passes through the centre of the circle.

(5) If a straight line touch a circle, and from the point of contact a straight line be drawn cutting the circle, the angles which this line makes with the tangent are equal to the angles in the alternate segments of the circle.

(6) Inscribe a regular hexagon in a given circle.

B.

(7) ABCD, AB′C′D′ are parallelograms having the same angular point A; if BB′ be parallel to CC′ it is also parallel to DD′, and CC′ is equal to the sum (or difference) of BB′ and DD′.

(8) The bisectors of the angles of a triangle are concurrent.

(9) AB is a diameter of a circle and P,Q any points on the circumference; if AQ, BP meet in O show that the circles described about the triangles APO, OQB intersect at a point E on AB; distinguish between the cases when P,Q are on the same side or on opposite sides of AB.

Show also that AP, EO and BQ meet in a point.

(10) ABC is an isosceles triangle having each of the angles ABC, BCA double of the third angle BAC; a point D is taken in AB so that AD equals BC and C,D are joined. If the circle described with centre A and radius AB cuts CD produced in K, show that the arc CK equals three times the arc CB.

Algebra.

(*Pass Paper.*)

(1) Find the G.C.M. and the L.C.M. of
$x^3-6x^2+11x-6$, x^3-2x^2-5x+6 and x^3-7x+6.

(2) Simplify:—

(i.) $\frac{a^2-b^2}{ab}+\frac{2ab}{a(a+b}-\frac{a^2}{b(a-b)}+\frac{4b^2}{a^2+b^2}$;

(ii.) $\frac{x}{3}-\frac{x+1}{x-1-\frac{6}{x-2}}$

(3) Solve the equations:—

(i.) $\frac{2x+7}{12}-\frac{3x}{x-5}=\frac{x-7}{6}$;

(ii.) $\frac{x-a}{b}+\frac{y-b}{c}=\frac{x-b}{a}+\frac{y-a}{c}+\frac{(a-b)(a-c)}{ac}=0$.

(4) The sum of the numerator and the denominator of a certain fraction is 16; if the numerator be increased by 4 and the denominator decreased by 4, the fraction becomes $\frac{5}{3}$; find the fraction.

(5) Find the square root of

(i.) $(x+3)(x+4)(x+5)(x+6)+1$;

(ii.) $31+10\sqrt{6}$.

(6) Solve the equations:—

(i.) $2(x-3)(x-5)+3(x-4)-12=0$;

(ii.) $\frac{x-1}{x+7}+\frac{1}{x-3}=\frac{5}{6}$.

(7) A dealer buys a certain number of dozen of eggs for 16s.; he sells them at 10d. a dozen and gains as much as he gave for 6 dozen; how many dozen did he buy?

(8) If the equation $x^2+2(3+p)x+p^2=0$ has equal roots, find the value of p.

α, β are the roots of the equation $x^2+ax+b=0$; form the equation whose roots are $\frac{1}{\alpha^2}$, $\frac{1}{\beta^2}$.

(9) Simplify:—

(i.) $\frac{\sqrt{5}-1}{3\sqrt{5}+7}+\frac{\sqrt{5}+1}{\sqrt{5}+3}$;

(ii.) $\sqrt[3]{\frac{x^{\frac{2}{3}}}{y^{\frac{1}{3}}}}\times\sqrt[4]{\frac{y^{\frac{1}{2}}}{x^{\frac{1}{2}}}}\div\sqrt{\frac{x^{\frac{1}{2}}}{y^{\frac{1}{2}}}}$.

(10) If $a:b=c:d$, prove that $\frac{a^2+b^2+c^2+d^2}{a^{-2}+b^{-2}+c^{-2}+d^{-2}}=abcd$.

Answers.

(1) $x-1$; $(x-1)(x^2-4)(x^2-9)$. (2) (i.) $\frac{b^2+ab-a^2}{a(a-b)}$;

(ii.) $\frac{(x-1)(x-6)}{3(x-4)}$. (3) (i.) -7; (ii.) $x=a$, $y=b$. (4) $\frac{5}{11}$.

(5) (i.) $x^2+9x+19$; (ii.) $5+\sqrt{6}$. (6) (i.) $\frac{1}{2}$ or 6;

(ii.) 5 or 33. (7) 24. (8) $-\frac{3}{2}$; $b^2x^2-(a^2-2b)x+1=0$.

(9) (i.) $3(\sqrt{5}-2)$; (ii.) $y^{\frac{1}{3}}$.

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JUNIOR OXFORD LOCAL EXAMINATION, JULY, 1901.

Revision Tests.—No. 1.

THE following papers are the first of two in each of the subjects dealt with; the second tests will appear in the June number.

Arithmetic.

(*Pass Paper.*)

(1) How many persons can receive equal shares of 6s. 8½d. out of a total sum of £142 6s. 7½d.? If one person receives in addition the sum remaining over after the division has been made, how much will be receive?

(2) How many miles, furlongs, &c., are there in one million three hundred and thirty thousand and twenty inches?

(3) Simplify (i.) $\frac{3-2\frac{1}{4}+2\frac{1}{3}}{3\times 2\frac{1}{4}-2\frac{1}{3}}$;

(ii.) $\frac{1}{8}$ of £3 + $\frac{1}{3}$ of 5s. − $\frac{7}{10}$ of 3 half-crowns.

(4) A half-gallon jar is one quarter filled with milk and water mixed in the proportion of 1 to 3; if the jar be filled up with milk, how much milk will there be altogether in the jar?

(5) Divide ·015276 by 1·14.

Add together ·175 of 3 cwt., 2·235 of 1 qr. and 2·31 of 2 lbs. Bring your result to the decimal of one ton.

(6) If a solid silver spoon weighing 15 dwts. 8 grs. cost 1s. 10d., what is the value of a solid silver tray weighing 19 lbs. 11 oz. 4 dwts.?

(7) Find, by Practice, the total cost of maintaining 154 boys in camp for 3 weeks 2 days at an average cost per boy of 7s. 6½d. per week.

(8) A money lender charges 6d. per £ per month; how much is this per cent. per annum?

What will be the Simple Interest on a loan of £45 for 1 year 4 months?

(9) 6 men and 3 boys can finish a piece of work in 7 hours; at the end of 2 hours they are joined by 4 more men and 2 more boys; how much sooner will the work be finished if one man does as much work as 3 boys?

Answers.

(1) 424; 9s. (2) 20 mi. 7 fur. 37 po. 1 yd. 1 ft. 6 in. (3) (i.) $\frac{3}{5\frac{7}{8}}$; (ii.) £1 4s. 9d. (4) 3¾ pints. (5) ·0134; 1 cwt. 14 lbs; ·05625 ton. (6) £28 12s. (7) £190 5s. 6½d. (8) 30%; £18. (9) 2 hrs.

English Grammar.

PARSING AND INFLEXION.

(1) Parse the words in italics in the following passage:—

Come, come, the cause; if *arguing* make us *sweat*,
The proof of it will turn to redder drops.
Look, I draw a sword against conspirators:
When think you that the *sword* goes up again?
Never, *till* Cæsar's three-and-thirty wounds
Be well *avenged*, or till another Cæsar
Have added slaughter to the sword of traitors.

(2) Give an account of the formation of the Possessive case. When is it used?

(3) Enumerate some of the ways in which the past tenses of verbs are formed. Give the first person singular of the past tense of:—weave, shoe, light, lie, lay, abet, fulfil, refer, differ. Give the present participles of:—sing, cringe, leave, agree.

(4) Explain what is meant by a Relative pronoun. Distinguish between the uses of *who* and *that*.

(5) What do you understand by the comparison of adjectives? What adjectives do not admit of comparison? What rules of spelling obtain when adjectives are compared by means of inflexion?

(6) Give instances of the parts of speech to which each of the following words may belong:—round, after, that, the, stone, needs.

(7) Distinguish between transitive and intransitive verbs. Name some that are always transitive, some that are always intransitive and some that vary.

English History, 1399-1603.

1399-1558.

Not more than five questions to be attempted, of which one must be Q. 6.

(1) "Uneasy lies the head that wears a crown." Show from the events of Henry IV.'s reign that that King had good reason for saying this.

(2) Mention the principal causes and not more than six notable incidents in the Wars of the Roses.

(3) Distinguish clearly between two Dukes of Buckingham, two Dukes of Clarence, two Dukes of Gloucester, two Dukes of Norfolk, and two Earls of Warwick, who played prominent parts in the history of this period. Mention the family names of each if possible.

(4) Trace the relations existing between the first four Tudors and Scotland.

(5) Write a brief account of Henry VIII.'s breach with Rome.

(6) Set down in three columns (*a*) the following place names, (*b*) where the places are, (*c*) why they are important in the history of this period:—*Arras, Calais, Chastillon, Hornildon Hill, Mortimer's Cross, Newfoundland, Northampton, Pinkie, Shrewsbury, Wakefield.*

Henry V.

(1) "Henry is Shakespeare's ideal man of action." Illustrate this, quoting where you can.

(2) Why did Shakespeare abandon his expressed intention of making fresh sport for his audience with Falstaff in this play?

(3) Explain with reference to the context:—

'Tis a hooded valour, and when it appears it will bate.

The humour of it is too hot, that is the very plain song of it.

We will, in France, by God's grace, play a set,
Shall strike his father's crown into the hazard.

I am not Barbason; you cannot conjure me.

Each battle sees the other's umbered face.

You shall be a woodmonger and buy nothing of me but cudgels.

I charge you, in his Majesty's name, apprehend him! He is a friend of the Duke Alençon's.

(4) Quote as exactly as you can *one* of the choruses *or one* of the passages beginning:—

(*a*) In which array (brave soldier) doth he lie.
(*b*) What's he that wishes so?
(*c*) True: therefore doth heaven divide.

(5) In what context and with what meaning are the following words used:—caveto, rivage, bawcock, vaward, curtle-axe, broached, kecksies, haggled.

Poems of England.

(1) What special points in Cromwell's character and career are selected for eulogy by (*a*) Milton, (*b*) Marvell, (*c*) Waller?

(2) What have Tennyson, Scott and Wordsworth to say respectively of the patriot-statesman? Who was the original of "The Happy Warrior," and how far is the portrait true to life?

(3) What martial lyrics particularly recall Drayton's "Agincourt?"

Give a sketch of the treatment of the theme in each.

(4) What do you know of:—Sir Henry Lawrence, Sir John Moore, Colonel Seton, Blake, Scarlett, Sir Richard Greville, Electra, Longleat, Ardennes, Blenheim, Piedmont, Thebes, Kaux?

(5) Explain, in reference to the context, the following passages:—

Sounds, not arms, shall win the prize,
Harmony the path to fame.

One decree
Spake laws to *them*, and said that by the soul
Only the nation shall be great and free.

Cut Prejudice against the grain.

Our Britain cannot salve a tyrant o'er.

For 'tis all one to courage high,
The emulous, or enemy.

(6) Give the meaning of:—imp, guerdon, galleon, climacteric, embrasure, larboard.

Geography.

GENERAL PAPER.

(1) Account for the formation of the Nile delta. Give its extent and principal water-ways.

(2) Explain the terms:—isthmus, lagoon, atoll, watershed, equator, meridian.

Give a short account of the trade winds.

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(3) From what countries do we import:—sugar, rice, sago, cotton, teak, currants?

Name the chief gold-producing countries of the world.

(4) Where are the following:—Rotterdam, Cracow, Cadiz, Colombo, Astrakhan, Quito?

What are the boundaries of Switzerland?

(5) Where do we find:—Basques, Maoris, Cingalese, Albanians, Banians, Moors?

(6) Explain the meaning of latitude, and longitude. Give the latitude of:—London, Bombay, Moscow, Cape Wrath, Pondicherry.

(7) Name the various kinds of ocean currents, and illustrate their effects on climate and navigation.

(8) Describe the overland route to Australia.

(9) Name the seas washing the shores of Asia, with the chief ivers flowing into each.

French.

(1) Translate into French:—

(*a*) One fine morning in the month of July, 1831, the island left the bottom of the sea and appeared at its surface.

(*b*) The letters which he had received had announced the death of the General.

(*c*) They praise each other every day.

(*d*) Here I am; do not speak to me.

(2) Translate into French:—

During the last sixty years many things have been done to improve the state of this country, and to give its people a b tter share of the blessings of life. We have better schools, better books, better clothes, and better laws than our forefathers. These improvements have been obtained for us by the work of men many of whom have now passed away.

(3) Write out the preterite, the present subjunctive and participles of *finir, marcher, venir, aller, paraître.*

(4) Give the feminine of: *loup, chanteur* (2 forms), *acteur, maître;* and the plurals of *rameau, cheval, tableau, ciel, travail.*

(5) State the cases in which the verb *être* is used as an auxiliary.

(6) Translate into English:—

Il est de bonne heure encore quand nous montons à cheval pour commencer l'étape du jour, sous un ciel couvert et tourmenté d'où cependant les averses ne tombent plus. Suivant une pente ascendante vers les hauts plateaux, nous cheminons jusqu'à midi par des sentiers de fleurs, au milieu de champs d'orge, entre des séries de collines que tapissent des bois d'oliviers aux ramures grises, aux feuillages obscurs.

(7) For those only who offer "Chouans et Bleus." (The page references to Hachette's edition.)

(1) Translate (*a*) p. 3, ll. 5-17; (*b*) p. 107, ll. 8-16; (*c*) p. 141, ll. 20-28.

(2) Write notes on—*Vendée; faites-moi ranger ces drôles; un bonnet phrygien; ces sans-culottes verraient beau jeu.*

(8) For those only who offer "La Tulipe Noire." (The page references are to Hachette's edition.)

(1) Translate (*a*) p. 43, ll. 12-19; (*b*) p. 197, ll. 19-28; (*c*) p. 245, ll. 8-14.

(2) Write notes on—*Comme au temps des Amalécites; pour avoir meilleur jour; vasistas; où voulait en venir le prince.*

Euclid.

BOOKS I. AND II.

A.

(1) Define "an angle," "a segment of a circle" and "a rectangle." State the converse of the Twelfth Axiom.

(2) ABC, DEF are two triangles having the sides AB, BC, CA respectively equal to the sides DE, EF, FD; prove that the angle ACB is equal to the angle DFE.

(3) The opposite sides and angles of a parallelogram are equal, and each diagonal bisects the parallelogram.

(4) On a given straight line AB describe a rectangle equal to a given triangle.

(5) If a straight line be divided into any two parts, the square on the whole line is equal to the sum of the squares on the two parts together with twice the rectangle contained by the two parts.

(6) In any triangle the square on the side opposite an acute angle is less than the squares on the sides containing it by twice the rectangle contained by either of these sides, and the straight line intercepted between the perpendicular let fall on it from the opposite angle and the acute angle.

B.

(7) C is the middle point of the given straight line AB; from C a straight line CD is drawn equal to CA or CB. Show that if AD, DB be joined the angle ADB is a right angle.

(8) The straight line joining the middle points of the sides of a triangle is parallel to the base.

(9) Construct a triangle equal in all respects to a given triangle having one side lying along a given straight line, and its opposite angular point on the circumference of a given circle. How many such triangles can be drawn as a rule? When is the problem impossible?

(10) Divide a straight line into two parts so that the rectangle contained by the two parts may be equal to a given square.

Algebra.

(*Pass Paper.*)

(1) (i.) Simplify $2(a-3b)-[2a-3\{4a+(2b-3a)\}]$.

(ii.) Explain why $-a+b-c=-(a-b+c)$.

(2) Divide $9a^3-3a^2c+3ac^2-ab^2+bc^2+abc-c^3$ by $3a+b-c$.

(3) Find the coefficient of x^3 in the product of $1-3x$, $1-4x$ and $1-3x-2x^2$.

(4) The weight of water in a tank is x lbs.; if the tank be a ft. wide, and b ft long, and a cubic foot of water weigh $62\frac{1}{2}$ lbs., what is the depth of water in the tank?

(5) Solve the equations:—

(i.) $\frac{2x-7}{4}-\frac{3x-1}{7}=\frac{x-20}{12}$.

(ii.) $\frac{3x+2y}{2}-\frac{5x-y}{3}=\frac{5y-2x}{5}+\frac{1}{10}$;

$\frac{x-y}{3}+\frac{3x+y}{4}+\frac{7}{6}=0$.

(6) A bag contains 44 coins, shillings and sixpences; if the shillings be changed to sixpences and the sixpences to pennies, the value is reduced by £1; how many coins of each kind were there?

(7) Find the Least Common Multiple of

ax^2-a^3, $x^3+ax^2+a^2x+a^3$ and $x^3+ax^2-2a^2x$.

(8) Reduce to their simplest forms:—

(i.) $\frac{2x^2y-2xy^2+5xy-5y^2}{2x^2y-xy-15y}$;

(ii.) $\left[x-\frac{x+3y}{1+xy}\right]\div\left[x^2-\frac{x(xy+3)}{x+y}\right]$.

(9) Find the square root of

$x^2+xy+\frac{y^2}{4}+\frac{z^2}{9}-\frac{yz}{3}-\frac{2xz}{3}$.

(10) If a cyclist travelled $2\frac{1}{2}$ miles an hour faster he would reach his destination half-an-hour earlier, but if he travelled $2\frac{1}{2}$ miles slower, he would arrive fifty minutes later; how fast is he travelling and how many miles distant is his destination?

Answers.

(1) (i.) $3a$. (2) $3a^2-ab+c^2$. (3) -22. (4) $\frac{2x}{-125ab}$ ft. (5) (i.) 5; (ii.) $x=-1$, $y=1$. (6) 20 shillings, 24 sixpences. (7) $ax(x+2a)(x^4-a^4)$. (8) (i.) $\frac{x-y}{x-3}$; (ii.) $\frac{y(x+y)}{x(1+xy)}$. (9) $x+\frac{y}{2}-\frac{z}{3}$. (10) 10 miles an hour; 25 miles.

PRELIMINARY OXFORD LOCAL EXAMINATION, JULY, 1901.

Revision Tests.—No. 1.

THE following papers are the first of two in each of the subjects dealt with; the second tests will appear in the June number.

Arithmetic.

(1) Reduce one million one hundred thousand ounces to tons, cwts., &c.

(2) Multiply £13 6s. 8½d by 349.

(3) Find the greatest common measure of 1834 and 4061.

(4) Simplify (i.) $(5-\frac{2}{3})\div\frac{5}{9}$ of $3\frac{1}{4}$;

(ii.) $\frac{2}{5}$ of 12s. 6d. $+\frac{3}{7}$ of 5 guineas $-\frac{1}{4}$ of 10s

(5) Divide ·125757 by 1·413.

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(6) If it cost £5,818 15s. to lay down a tramway 2 miles 3 furs. long, how much will it cost for a line 3 miles 2 furs. 20 poles long?

(7) What is the value of 12 cwt. 2 qrs. 8 lbs. of sugar at £8 15s. per ton?

(8) Find the Simple Interest on £4,780 for 4 years at 6¼ per cent. per annum.

Answers.

(1) 30 tons 13 cwt. 3 qrs. 10 lbs. (2) £4,654 1s. 2½d. (3) 131. (4) (i.) 2⅔; (ii.) £2 7s. 6d. (5) ·089. (6) £8,115 12s. 6d. (7) £5 10s. (8) £1,195.

English History, 1399-1603.

1399-1509.

Not more than five questions to be attempted, of which one must be Q. 6.

(1) Tell the story of *any one* of the following episodes:—(*a*) The Southampton Conspiracy, (*b*) Jack Cade's Insurrection, (*c*) Lambert Simnel's Rising.

(2) Write a short life of *either* (*a*) Margaret of Anjou, *or* (*b*) Warwick the Kingmaker.

(3) Give an account of the reign of *either* Henry V. *or* Richard III.

(4) Mention not more than half-a-dozen members of the Royal Family (*i.e.*, of Edward III.'s descendants) who came to violent ends during this period. State very briefly the circumstances of each death.

(5) Show some acquaintance with Shakespeare's historical plays dealing with the fifteenth century.

(6) Where are the following places, and how do they come into the history of this period?—*Agincourt, Barnet, Blackheath, Bosworth, Orleans, Pequini, St. Albans, Stoke, Towton, Troyes.*

English Grammar.

INFLEXION AND PARSING.

(1) Parse fully each word in the following passage:—

Then rode Geraint, a little spleenful yet,
Across the bridge that spanned the dry ravine.

(2) Compare these adjectives:—much, few, lowly, tender. What adjectives cannot be compared?

(3) Decline:—man, lady, she, who.

(4) What is the difference between a transitive and an intransitive verb? Give examples.

What is meant by the mood of a verb?

(5) Name and give examples in sentences of the various kinds of pronouns.

(6) Make sentences to show that the words—will, that, out, round—may belong to different parts of speech.

Poems of England.

(XI.-XVI., XXV.-XXVIII., XXXII.-end.

(1) Describe in your own words (*a*) Sir Richard Greville's last battle; (*b*) the Charge of the Heavy Brigade; (*c*) the Relief of Lucknow.

(2) In what respect can a superior claim for heroism be assigned to "a drunken private of the Buffs," or the men of the *Birkenhead*, rather than to the "Six Hundred?"

(3) What answer could you have given if you had been "Old Kaspar?"

(4) What do you know of:—Lochiel, Roncesvalles, "Bohemia's plume," Skiddaw, Assaye, "Gaunt's embattled pile," Boadicea, Kempenfelt?

(5) Explain fully in your own words:—

Regions Cæsar never knew
Thy posterity shall sway.

A people's voice! we are a people yet,
Tho' all men else their nobler dreams forget,
Confused by trainless mobs and lawless Powers;
Thank Him who isled us here, and roughly set
His Britain in blown seas and storming showers,
We have a voice, with which to pay the debt
Of boundless love and reverence and regret
To those great men who fought, and kept it ours.
Tho' niggard throats of Manchester may bawl,
What England was shall her true sons forget?
We are not cotton-spinners all.

Geography.

GENERAL PAPER.

(1) What do you understand by the terms:—watershed, lagoon, latitude, peninsula, gulf?

(2) Name the countries bordering on the Mediterranean Sea, and give two seaports in each.

Describe the situations of:—Calcutta, Pekin, Aden, Goa, Smyrna.

(3) Give an account of the ways in which volcanoes are formed. Where are the chief volcanic regions of the world?

(4) Whence do we get our principal supplies of:—cotton, sugar, rice, gold, timber? To which of our ports would ships bringing these things come?

(5) In what countries are the following:—Himalayas, Niagara, Blue Alps, Amazon, Hecla?

(6) Write a short account of the uses of rivers.

French.

(1) Translate into French:—

(*a*) The 25th of March, 1901.

(*b*) Have you seen the apples I have bought?

(*c*) He sings worse than you, because he has a worse voice.

(*d*) These Scotch cakes are very good. Take some.

(2) Give the second person singular of the imperfect subjunctive of *avoir*, of the imperfect indicative of *finir*, and of the conditional of *pouvoir*.

(3) Write the feminine of—*l'empereur, épais, malin, le maître*, and the singular of—*dieux, travaux, lesquelles* and *les yeux*.

(4) Translate into English the following passages from "Seulette." (The page references are to Hachette's edition.)

(*a*) p. 23, ll. 14-23; (*b*) p. 38, ll. 23-30; and (*c*) p. 44, ll. 21-28.

(5) Parse "*ouverte*" and "*fit*" in ll. 15 and 21 of 4 (*a*).

Write in the plural "je me sentis de nouveau heureuse," and give the present infinitive of "*faisait.*" 4 (*b*).

What peculiarity is there about the word "mangeait"? Illustrate by comparison with another verb of the same person and tense occurring in 4 (*c*).

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Heuristic Method of Teaching Science.

IN the recent expression of experience of the Heuristic Method by several science masters in THE SCHOOL WORLD, Mr. H. E. Hadley alone has drawn up any serious indictment against it, and I venture to examine his statement of three sources of difficulty which, in his opinion, the elementary student must face in his application of the method.

(1) "The time at the student's disposal is so limited." Mr. Hadley implies that but little ground can therefore be traversed. May I refer to the letter of "A. H. F." in the October issue, which admirably points out that on theoretical grounds this is no objection, since even a little genuine heuristic work has been proved to give "a power of seeing things, an alertness and adaptability in turning to fresh matter, which makes the great gaps in methodic knowledge of comparatively little importance." As Professor Miall has said, the method is a *live* one.

At the same time, I admit that certain examination syllabuses do make this, on practical grounds, a real objection in

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the way of the application of the method by some science masters; these syllabuses and the examiners who man them do form the last line of entrenchments which reformers need to assault and carry.

(2) "His accuracy of work is nearly always too uncertain to allow the experimental results to be taken as a convincing proof of scientific laws." When Mr. Hadley penned these words, I fancy he wrote rather as a physicist than as a chemist. Much of the work of the young chemist is not directed towards establishing "laws." He is, for instance, occupied with the study of combustion, and is unexpectedly led to the discovery that account must be taken of the air, and he finds that the air is not a simple substance—a very important fact, but not a *law*. Experience has established again and again that the accuracy of work of the average boy is quite sufficient to enable him to work out such a problem. Or he may be occupied with the composition of water, or the change of chalk into lime. Again and again have average boys achieved success in such problems, and acquired habits of enquiry which we may well believe will persist throughout life.

But law, as well as fact, can be established or verified by boys. Take the Law of the Conservation of Mass. I have seen a class of boys, working in pairs, carry out Scheele's experiment on the combustion of phosphorus in air enclosed in a round-bottomed flask, an experiment which I have heard described as entirely unsuitable for boys. The change in weight and the volume of air which had disappeared were determined. When the boys had all completed the necessary measurements, they were gathered together, and their results written upon the blackboard as follows, and discussed, and the *mean* result calculated :—

19·9 cc.	+·01 gram.
20·7	+·01
20·0	+·00
22·0	—·02
20·6	+·00
18·9	+·01
19·5	+·03
18·2	+·00
20·3	+·02
Mean 20·01 cc.	+·006 gram.

This comparison and discussion of results is of the utmost importance, and it is here that experience of the master in higher work, preferably in original research, is of great value. Instead of each boy repeating the experiment a number of times, as the researcher will do, he compares his own result with those obtained by his comrades, and the *mean* result is generally surprisingly near its theoretical value, just as it was in the above experiment, when the boys satisfied themselves that only one-fifth of the air disappeared, and that there was no annihilation of material in the change. In my experience there is rarely need to affirm that "results *ought* to have been *so and so*."

(3) "Sooner or later it is found that a deduction can only be arrived at by assuming some fact which the student has not yet proved." Mr. Hadley here overlooks the fact that the scientific method includes deductive methods as well as inductive. This has already been admirably stated by Dr. E. Howard Tripp in The School World for October. It is true that John Dalton refused to accept the results of others; but this was to his loss. Lavoisier, on the other hand, was quick to avail himself of the work of Priestley, and the modern investigator is bound to assume many facts which he has not proved. From the historical standpoint there is every reason that the student should, within limits, assume some of the results of others, and compare his own results with those obtained by his fellows engaged upon the same problem.

And here it may be added that the Heuristic Method includes the aid of *working hypotheses*. For instance, when boys innocent of chemistry first study the phenomenon of combustion, and consider, for example, what occurs when a strip of magnesium ribbon is burnt, those who can offer any suggestion will generally take a phlogistic view, and their theory of the *escape* of something from the burning metal and also from other combustible substances will serve as a valuable working hypothesis. I recall a class of twenty-eight boys, not one of whom suggested that the air had any part in the combustion of magnesium, and they were greatly surprised to find subsequently a *gain* in weight after the metal had been burnt. (It is perhaps worth remarking that in asking for explanations or suggestions it is usually advisable to ask boys to *write these down* on slips of paper. Older boys are less ready to appear foolish, it may be, before their comrades, and, moreover, some minds work more slowly than others, and require time and quiet to frame an intelligible answer.)

Mr. Hadley also takes objection to the young student using such "obsolete terms" as "Inflammable Air" and "Fire Air." My own experience leads me to an exactly opposite opinion. The words *oxygen*, *hydrogen*, *nitrogen* are technical terms which suggest no ideas to those who do not know the grounds on which they were introduced a hundred years ago, and owing to a certain similarity between them, one name is apt to be confused with and interchanged for another. Ask a few educated ladies, who have no special knowledge of chemistry, to write down the chief gases in the atmosphere, and the odds are half of them will instance hydrogen. I tested on this point a Form of thirty-two boys (average age 13½), who had attended one or two lectures on respiration, and possessed some odds and ends of chemical knowledge; seven of them included hydrogen, while three omitted oxygen, and twelve left out nitrogen. In another Junior Form five boys out of twenty-seven instanced "carbolic acid" in place of carbonic acid. On theoretical grounds also strong objection can be taken to the term *oxygen*, and the genius of Davy and others was, as a matter of history, needed to combat the errors which it introduced. In my opinion, it is to be regretted that *Fire Air* is not to-day the popular name of the gas.

"A. H. F." (*loc. cit.*) has rightly emphasised the need of attention to *style* in science work. And, further, difficulties must be faced and not slurred over, or much of the value of the heuristic work as *discipline* will vanish. Is there not an instance of just this in Mr. C. M. Stuart's "Study of Common Salt," in the December issue of The School World, when, after trying the action of a solution of "salt gas" upon zinc and the discovery of the liberation of hydrogen, it is triumphantly exclaimed, "We have therefore learnt that salt gas contains hydrogen." The mere observation of the escape of hydrogen of course proves nothing of the kind; nor is it easily proved that chlorine does not contain oxygen (*cf.* Davy's researches).

Let the words of Lessing be remembered which have been quoted[1] by Prof. H. E. Armstrong: "If the Almighty were in one hand to offer me truth and in the other the search after truth, I would humbly but firmly choose the search after truth."

Bevan Lean.

Ackworth School, near Pontefract.

Examination Answers in English History.

The following paragraphs put into narrative form a series of answers received in a recent public examination to a question asking for a list of the dominions William and Mary were de-

[1] Before a Conference at the Health Exhibition, 1884.

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sired to administer in 1688. It is unnecessary to comment upon such replies.

"On the Continent of Europe, we owned the Netherlands, otherwise known as the kingdoms of Holland and Belgium, in virtue of the well-known law that whatever countries may be under the rule of a person who is called to the British crown instantly became the property of their insular subjects. Besides, we had already acquired those territories, as well as Sweden, by forming with them the Triple Alliance of 1668."

"France was ours by ancient prescription, and if evidence were wanting for this fact, we might refer to the titles borne universally at that time by our sovereigns. In special, we had possessed, since Plantagenet times, Normandy, Anjou, Maine, Touraine, and Aquitaine. Some have alleged that we had lost Calais in the reign of Mary Tudor, but it appears that it was restored to us shortly after for a sum of money. Spain and Portugal had also devolved upon the British crown by virtue of two marriages, those, namely, of Henry VIII. with Catherine of Aragon, and of Charles II. with Catherine of Braganza Italy, too, and Austria owned our sway, while parts, if not the whole of Germany obeyed the commands of the English sovereign. Hanover and the Palatinate, at least, were ours by the marriage of James I.'s daughter Elizabeth and of her daughter Sophia. Many of these possessions, of course, had needed conquest to enforce, and even the North Foreland was ours only by right of conquest from the Dutch."

"In Asia our dominion was owing simply to conquest. In this way we owned India and the Malay Peninsula, China and Japan. Australia, too, was already ours. Tasmania, New Zealand, and the great Pacific Archipelago were British colonies, having been acquired mainly by Sir Francis Drake in his famous voyage round the world in Elizabeth's reign.

"Africa was already under our control. Not to mention the western coast, which we had exploited for slaves, Cape Colony had already been acquired from the Dutch in consequence of our desire for the welfare of the aborigines, and the Transvaal, the Congo territories, Madagascar and Egypt had been conquered. All that remained for the eighteenth and nineteenth centuries to do was to develop the resources of these vast acquisitions."

"As the Eastern World had been acquired for us by the discoveries of Vasco da Gama, so Columbus had equally discovered the New World for our benefit. North, Central, and South America were ours, in spite of Spain and the Pope. From the Arctic circle, where Davis and Frobisher Straits were British colonies, to the straits of Magellan, all were in our possession, and either actually colonised or under our control."

EXAMINER.

Mercator's Projection and the Central Cylindrical Projection.

IN a review of the "London School Atlas" in the February number of THE SCHOOL WORLD, Dr. H. R. Mill remarks that I seem to "confuse the Central Cylindrical Projection with the arbitrary system of Mercator." In justice to myself will you allow me to offer the following explanation?

The Central Cylindrical and Mercator's Projections are so often confused in English books that in my introductory chapter to the London School Atlas I took special pains to distinguish them, and this distinction was clearly drawn in the final proof as I passed it for the press. On receiving the Atlas I was much concerned to find that in several instances unauthorised changes and re-arrangements had been made, and that, in particular, the foot note on page 9 was so worded as to confuse Mercator's Projection with the Central Cylindrical. The changes in question were presumably made by some person in the employment of the London School Atlas Company, and were without any authority from me, or, so far as I can gather, from Mr. Arnold-Forster, who was in South Africa at the time. On reading the published version I immediately wrote to Mr. Arnold-Forster protesting against the liberties which had been taken with my final proof, and I am very glad that Dr. Mill, by calling attention to the matter, has given me the opportunity of repeating my protest publicly and repudiating any responsibility for perpetrating a common error.

A. J. HERBERTSON.

Oxford,
February 7th.

The Social Position of Assistant-Masters.

I SHOULD be much obliged if you could grant me a little space for a growl on a topic which should interest a vast number of your readers. I refer to the social position of the average assistant-master, who is a university man. All of us who are graduates are, at all events nominally, gentlemen; most of us, too, are gentlemen by birth as well as by education. Yet how are we received in society? Your readers all know what sort of position we occupy, and how, being after all gregarious animals, we are pushed down the social scale and have to choose between associating with our social inferiors or leading a solitary existence cut off from the society of our fellow-men, and—worse still—from the humanising influence of ladies' society. I speak feelingly and with knowledge.

For many years I have been a master in various private and grammar schools, and I have never made the acquaintance of any single person, unless it chanced that I had personal introductions from outside sources. Of course I could have got into several sets, sets in which my colleagues have been content (?) to move. But many of them too, I feel sure, have only socially sunk from the necessities of the case. Why should this be so? For this state of things must have a very bad effect on the younger members of the profession, especially in the matter of feminine companionship. I have known many cases in which assistant-masters have taken to drink or bad company from sheer disgust. Surely this state of things might be remedied? And any alteration must come from the parents of the pupils. They should make it their duty to call on those masters who are most intimately associated with their sons. Were I a parent, I should certainly like to make the acquaintance of the class-master to whose care the education of my son was entrusted.

But this is putting the matter on a somewhat different ground from what I had in mind when I started this letter; it is putting it on the ground of expediency on the part of the parents. What I originally meant to contend for was our right to be considered as members of the society of the professional classes, such society as that in which doctors, solicitors and clergymen move. Personally, I think I have a right to a social equality with the average curate. Like him, I am a 'Varsity man, and my income, though small enough, is better than the majority of curates command. Yet when a fresh clergyman comes to a parish everyone calls. But a schoolmaster can be two years in a town without a solitary soul—even the clergyman of the church he may attend—calling on him. It is easy enough for people to drop him if he prove an undesirable acquaintance, but surely he should be given the chance. Of all classes of professional men, it is, perhaps, the schoolmaster who requires the relaxation of congenial society in his free hours. Doomed to the study of books and boys all day, his chief recreation lies in the social circle, and I think that if parents would only realise how the efficiency of masters depends on their general happiness, they would endeavour to do their part in enlivening their existence.

A CAMBRIDGE MAN.

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PRIZE COMPETITION.

No. 13.—English Essays written to Skeleton Provided.

We offer four prizes, one each for the best essay in each class, on the lines shown below. The competitor's age must correspond with the restriction mentioned after the title of the subject. The prize in each division will be books to the published value of half-a-guinea, which must be chosen from the catalogues of Messrs. Macmillan & Co., Ltd.

The rules for the competition are as follows:—

(i.) Every packet of essays sent by the teacher of a Form, or separate essay sent by a private student, must be accompanied by a coupon (p. 6.)

(ii.) No essay received after Saturday, March 16th, 1901, will be examined.

(iii.) The decision of the Editors, which will be published, if possible, in the April, 1901, number, to be final.

(iv.) The competitor's age must be stated on every essay, which must also be endorsed by the teacher or other responsible person, certifying it to be the unaided work of the competitor.

(v.) Replies should be addressed to the Editors, The School World, St. Martin's Street, London, W.C.

(vi.) The following are the skeletons upon which the essays should be prepared:—

Dangerous Occupations (*Boys over* 15).

(1) Mention some dangerous occupations, say what the dangers are, and give a sympathetic account of the sufferings of the workpeople.

(2) Divide these occupations into two groups—(*a*) where remedies are possible, (*b*) where remedies are not possible.

(3) What is, or what should be, the attitude of the Government, of employers, of workpeople, and of the public towards the occupations in both groups?

(4) Consider the chief obstacles to a better state of things.

(5) What about wages, pensions to widows and children, compensation for injuries?

(6) Conclude with a hopeful outlook for the better protection of the workpeople, and the gradual diminution of such occupations.

Modern Manners (*Girls over* 15).

(1) Contrast the manners of modern men and women with the manners of their ancestors at the beginning of the 19th century, and manage the contrast in such a way as to lead up to the conclusion that the older type of manners is preferable.

(2) Question, however, if this is really a sound conclusion.

(3) We may admit that a certain amount of ceremony has disappeared, and perhaps it will be profitable to enquire into the causes of this disappearance.

(4) Among these causes will be (*a*) advanced education of woman and her competition with man; (*b*) abolition of duelling; (*c*) increased intelligence and prosperity of the working classes. Show how these things have diminished ceremony.

(5) But these things are in themselves good; and, since we have them, ought we to regret the loss of some ceremony in manners?

(6) Again, enquire what is the chief characteristic of the period (19th century) during which our manners are said to have deteriorated. Is it not a desire to be just to all and kind to the weak?

(7) Collect evidence to show the existence of the spirit of justice and kindness—(*a*) legislation concerning slavery, corn laws, labour, franchise, capital punishment, education, cruelty to animals; (*b*) charitable institutions; (*c*) questions still unsettled—old-age pensions, suffrage, and university degrees for women. This part of the essay must be made as strong as possible in view of the general conclusion.

(8) General conclusion. Is it likely that an age with such a spirit has degenerated in the essentials of politeness? Certainly not.

A Knight of the Road (*Boys under* 15).

(1) Lead up to the particular incident you are going to relate by making some general remarks on the dangers and inconveniences of English travelling in the 18th century.

(2) The scene and the time—a wild moor on a winter's night.

(3) Describe the highwayman waiting, masked, on horseback. Make him as interesting as you can, and suggest a motive for his intended crime.

(4) The travellers. These may be passengers in a public coach, people in a private carriage, farmers on horseback, or what you like.

(5) The encounter. Try to bring out the courage and cowardice of individuals.

(6) Defeat or victory of the highwayman. Let there be a dramatic end to the encounter.

(7) Solitude again—the moor and the darkness.

In writing this essay you may manage the encounter between the travellers and the highwayman as you please, making either the one or the other triumphant. You may give the narrative a humorous or a serious tone.

A Christmas Party (*Girls under* 15).

(1) The invitation received.
(2) Anticipation and preparation.
(3) Our arrival.
(4) General appearance of house, with lights and decorations.
(5) Our hosts.
(6) Some of the guests.
(7) How we amused ourselves.
(8) The supper.
(9) More amusements—the last and the best.
(10) Home again.

This essay should be written in a free style, like that of a private letter. Avoid too many details; otherwise you will create a feeling of confusion in the reader. Thus, don't enumerate all the guests, but choose a few who strike you as worthy of notice. In the same way, give a general view of the decorations, with a mention of the most attractive only. In regard to the amusements, describe as racily as you can those which you enjoyed. Take care to leave some telling incident for the end of the essay.

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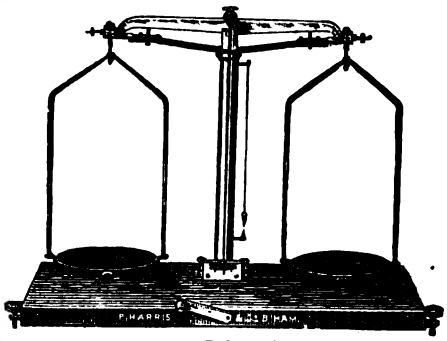

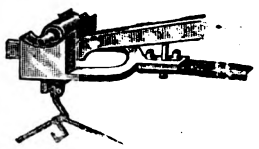

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No. 28. APRIL, 1901. SIXPENCE.

EDUCATIONAL ASPECTS OF RECENT ARCHAEOLOGICAL RESEARCH.

By F. E. THOMPSON, M.A.

I.—PRE-HISTORIC GREECE.

ARCHAEOLOGY, during the last half-century, has gone on from triumph to triumph, and is pursuing unchecked its victorious career. It has exhumed the long-lost civilisation of Mesopotamia. It is re-writing the history of Egypt, which it claims to have traced back to a no longer mythical Menes. In Syria and Palestine it has made discoveries of surprising interest. In Asia Minor it is producing evidence which throws fresh light on the writings of the New Testament and the early developments of Christianity. It is unremittingly pursuing its work in Italy and in the provinces of the Roman empire. But nowhere have the results of archaeology appealed more strikingly to the imagination than in the Aegean islands and the adjacent mainlands. For there a civilisation unknown to, or at the most dimly suspected by, the Greeks themselves, a civilisation of a high order, co-ordinate with, but independent of, Egypt and Mesopotamia, a civilisation essentially European in its possibilities, has re-emerged from the grave where it had lain buried for three thousand years.

An attempt will be made in this and three following papers to show the bearing of recent archaeological discovery upon the teaching of the classics and the Scriptures in our Schools. For let it not be supposed that archaeology, which deals with the material remains of the past, has little interest for the teacher of the languages, the literatures and the histories of the past. Material products are the surroundings in which we live and move and have our being; they are the work of men's minds, and in turn profoundly influence men's lives. The Parthenon and Olympian Zeus, the Cathedral and the Bon Dieu of Amiens, St. Peter's and the Sistine Madonna, are as representative of human ideals as the Homeric poems, the Attic tragedies, the Platonic dialogues, the Aeneid, the Divina Commedia and the plays of Shakespeare. The highest achievement of the teacher is to make the pupil feel that the writers of the past and those whom they describe were real men and women of like passions with ourselves, to render their teaching more animated, more fruitful, more humane, and by touches of nature to make the ancient and the modern world kin.

It is proposed first to sketch briefly some of the most important and best established results of recent archaeology as they affect the history of the Greeks, the Romans and the Hebrews, and afterwards to suggest how these results may be used by teachers in our schools.

GREECE.

I.—PRE-HISTORIC GREECE.—When the Greeks awoke to a consciousness of their national existence, their poets and logographers attempted a reconstruction of their past history. There were abundant materials for scientific research, had a true conception of scientific research then existed. Traditions had been handed on; old races still dwelt in the land; pre-historic monuments confronted men's eyes. But Greek reconstruction of its past took, for the most part, the futile form of "fables and endless genealogies."

The pioneer of Greek archaeology in its modern phase was Heinrich Schliemann. Nobly enthusiastic and intrepidly persevering, but insufficiently equipped with classical training, he excavated in Ithaca (1868), Hissarlik (1870-1873) and Mycenae (1876). He believed that he had discovered the very homes of the much-enduring divine Odysseus

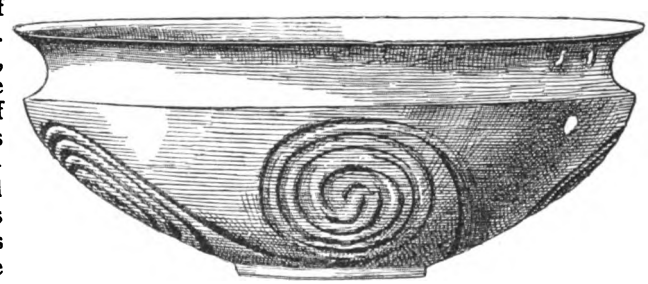

FIG. 1a.—Treasure from Aegina. Gold Cup, showing typical Mycenaean pattern of the returning spiral. (Brit. Mus.)
(From the *Journal of the Hellenic Society.*)

and the divine swineherd, the very Ilios of Hector and Andromache, the very body of the king of men, Agamemnon, interred in shameful haste after

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his most foul and most unnatural murder. What Schliemann unearthed was interpreted by the trained judgment of Sir Charles Newton. He saw that the treasure-trove of Hissarlik and of the Circle-Graves of Mycenae could not be identified with any known art. It was like and yet unlike the art of the Homeric poems; there were Egyptian, Mesopotamian, Phoenician affinities, but it was neither Egyptian, Mesopotamian, nor Phoenician.

Fig. 1*b*.—Treasure from Aegina (view of Fig. 1*a* from beneath). Central Rosette and returning spiral.
(From the *Journal of the Hellenic Society*.)

Since then unremitting explorations in the Aegean islands and coastlands have demonstrated the correctness of Newton's interpretation. An independent and indigenous civilisation is shown to have existed for at least a thousand years before the coming of the Hellenic tribes from the north. But in carrying back this civilisation to so high an antiquity new terms have been found necessary. "Mycenaean" is seen to be strictly applicable only to its later developments; "Proto-Mycenaean" or "Pre-Mycenaean" have been proposed for the earliest stages; "Sub-Mycenaean" for a late survival or afterglow represented by the Aegina or the Enkomi (Cyprus) treasures in the British Museum, while for the whole period "Aegean" and "Levantine" have been tentatively employed. A few typical instances of discoveries must suffice.

On the eastern coast of Greece remains similar to those of Mycenae and its earlier neighbour, Tiryns, have been found from Thessaly to Laconia. In Boeotia, on the western shores of the now drained Copaic lake, a sepulchral vault, with designs showing, like the palace of Tiryns, a marked Egyptian influence, built presumably by the kings of "golden Orchomenos." On a rock in the lake itself, a palace and fortress, with massive walls like to the Argolid buildings in structure, but unlike in plan. In autochthonic Attica, vaulted tombs at Eleusis, Acharnae and elsewhere. At Athens itself, the "Cyclopean" or "Pelasgic" wall, in parts nearly twenty feet thick, with the ascent and postern scaled and entered by the Persians, and a large chamber, possibly the Chalcotheke or store-house for bronzes. In Laconia, the tombs of the princes of Amyclae and the magnificent golden cups of Vaphio, somewhat Assyrian in style.

Of the islands, from Euboea to Cyprus, Melos and Crete alone can be noticed.

At Phylákopi, in Melos, three early settlements have been exposed. The uppermost and latest is "Mycenaean;" below this a strongly fortified town of the bronze period; below again on the rock an unwalled village of the neolithic age.

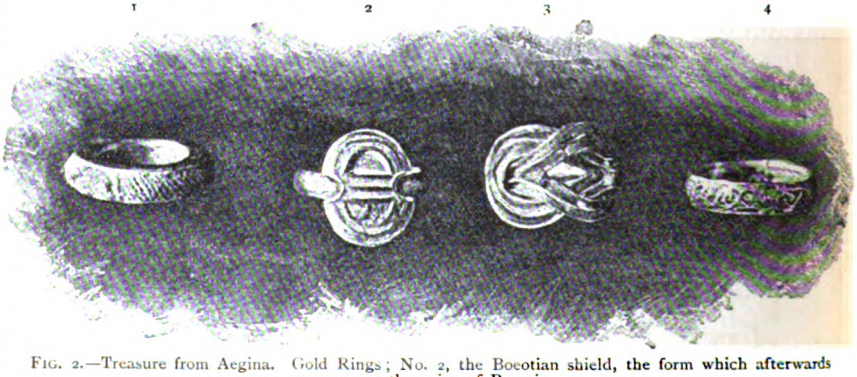

Fig. 2.—Treasure from Aegina. Gold Rings; No. 2, the Boeotian shield, the form which afterwards appears on the coins of Boeotia.
(From the *Journal of the Hellenic Society*.)

But the most important discoveries, both in quantity and value, are the most recent, those in Crete, "the promised land of the Greek archaeologist." The size of this island, its legendary renown as mistress of the sea, its many races,

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chief in suggestiveness being the true Cretans, the Eteokretes of the Odyssey, its "neighbour-nearness" to Asia Minor, Libya and Egypt, all mark it out as the key to the "Mycenaean" riddle. Passing over earlier research, we come at once to the amazing discoveries of 1900.

(*a*) *The Diktaean Cave.*—Legendary tradition, immortalised by Hesiod, Dionysius, Lucretius, Vergil, celebrated this as the birthplace of Zeus, the national god, the scene of his union with Europa, and the sanctuary within which Minos, in communion with his father, received the revelation of the law.

Mr. D. Hogarth has established beyond reasonable doubt the identity of the cavern of Psychro, high up in the Lasithi hills, with the Diktaean cave. The proof consists in the multitude of religious objects and votive offerings brought by prehistoric pilgrims from generation to generation, and now found as left by them. Many of these objects are marked with, some are miniature representations of, the *labrys* or double-headed battle-axe, the war-like symbol of the god.

(*b*) *The Labyrinth and the Minotaur.*—At Knossos, Mr. Arthur Evans has explored about half of a colossal palace with an adjacent town, "a veritable Pompeii." This palace is far different from, and far earlier than, those of Tiryns and Mycenae. It has, apparently, endless courts, galleries, magazines and chambers. In one of the chambers was found a carved alabaster chair, probably the oldest throne in the world. Throne, floor and walls are all brilliantly coloured. The fresco paintings, unique in the history of Aegean art, represent groups of men and women, the latter dressed in fashions somewhat resembling those of our own day. These frescoes for the first time give us the physical characteristics of the race, dark-haired, ruddy-skinned, with keen, clear-cut features. The decorative work in some points strangely anticipates the thirteenth-century Gothic. An Egyptian connection is shown by a lotus column supporting a porphyry lamp, and a seated figure in diorite belonging to the twelfth dynasty (B.C.

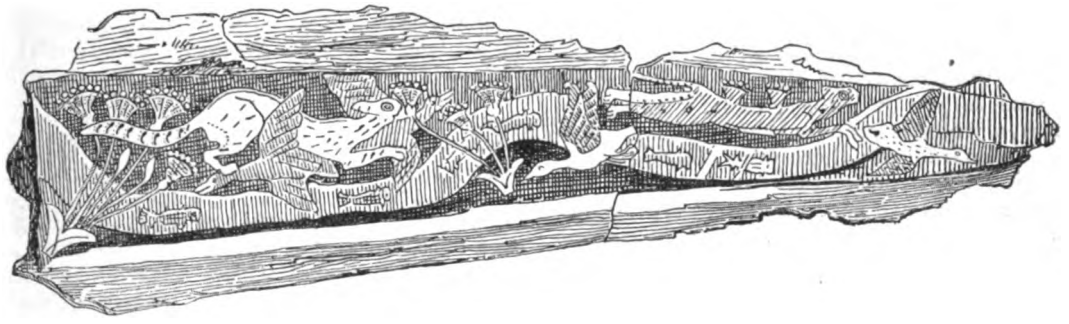

Fig. 3.—Dagger blade from Mycenae. Nile scene, showing Egyptian influence.

2800-2500). Some of the objects found here, as in the cave of Psychro, are of high artistic value. But of incomparably the greatest importance is the discovery of written documents many centuries older than the scanty Mycenaean finds hitherto known. They consist of a series of clay tablets inscribed with two distinct characters of prae-Phoenician writing, (1) pictographic, (2) linear, corroborating previous discoveries of the same description of gems and seals. The pictographic character somewhat resembles the "Hititte;" the linear consists of elegant upright letters. The tablets were originally placed in coffers of clay, wood and gypsum, secured by seals impressed with finely-engraved signets. These documents, like those of Assyria, to which the tablets present some resemblance, were, doubtless, the palace archives, the secrets of which await the decipherment of the writing.

This vast palace, with its maze of chambers and passages, was doubtless the Labyrinth, the house of the *Labrys*, the home of the Minotaur, the building which the legendary architect, Daedalus, is said to have imitated from the great Egyptian structure on the shores of Lake Moeris.

Many of the questions suggested by the above discoveries await solution, some probably will remain insoluble. The interpretation of the writ-

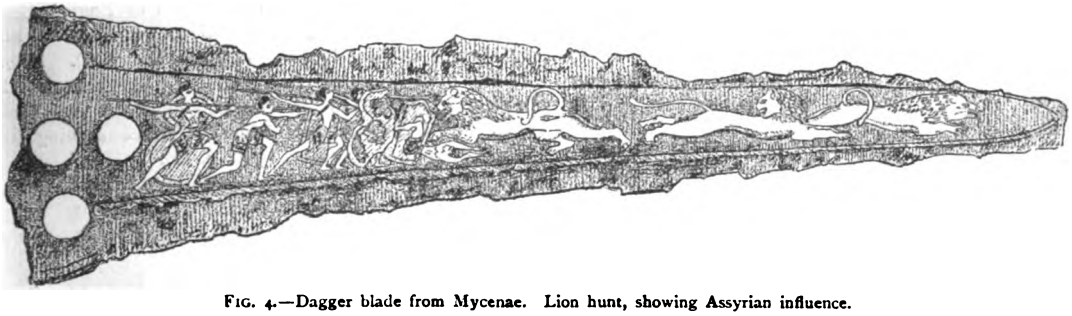

Fig. 4.—Dagger blade from Mycenae. Lion hunt, showing Assyrian influence.

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ing will reveal many secrets, including that of the language spoken. Meanwhile, some of the ascertained results may be summed up. Before the Hellenic incursions there existed a pre-historic race (or races) in the Aegean islands, on the eastern mainland of Greece, and to a much more limited extent and sporadically on the western seaboard of Asia Minor, which developed a very high degree of culture, as testified by its buildings, its metal work, its vases, its paintings and its commercial intercourse. In religion this race, like the Semites, worshipped many other objects, the sacred tree (the *Ashéra*) and the consecrated stone (the *maççeba*, *baetylos* or *beth-el*); in later times the religion was probably more eclectic. The government was monarchical; there were chiefs, people, and, judging from the vastness of buildings and roads, there must have been slaves. Writing was made use of for state purposes. Intercourse was carried on, to the east with Libya, Asia Minor, Syria, Egypt and Mesopotamia; in the Fayûm province of Egypt, and perhaps on the middle Nile, there were "Mycenaean" settlements; to the west with Sicily, Italy, Sardinia and Spain; to the north with Central and, probably, Northern Europe. Whence the race originally came we know not yet, but we can partly say what became of it, for it amalgamated to a considerable extent with the invading Hellenes, and more with Aeolians and Ionians than with the sterner Dorians. While adopting the language of the conquerors, it handed on to them its traditions and methods of art and commerce. Doubtless it passed on, in more or less altered form, its deities and its rituals. Thus, after the dark ages which followed on invasion, there came in the seventh and sixth centuries that hitherto inexplicably rapid outburst of Hellenic life, a renascence in a nobler form of the older civilisation. It is, in fact, to this "Aegean" or "Mycenaean" race that the nations of Europe must look back with gratitude as the mother of their civilisation.

The next paper will endeavour to show what light archaeology has shed on the Homeric Epic and Hellenic Greece.

(*To be continued.*)

TYPICAL SCHOOL TIME-TABLES.

V.—Cardiff Intermediate School for Boys.

OUR Typical School Time-table for this month shows in great detail the work of a large Welsh Intermediate School. A very prominent place is given to the out-of-school occupations of the boys, and the way in which Mr. Findlay, the Headmaster, has solved the difficulty of providing suitable leisure-hour pursuits for boys whose health makes the ordinary games undesirable is suitably indicated. We are glad to take this opportunity of recording our indebtedness to Mr. Findlay for the trouble he has taken to arrange the Time Table in a form which has made its publication easily possible.

The following notes will explain the various items in the Time Table as well as provide the reader with all the explanation necessary to understand thoroughly the course of work throughout the school.

References.

(*a*) School Prayers (hymn, short lesson, collect and Lord's Prayer) before 9.10 a.m. Prayers on Saturday at 11.40 a.m. followed by school songs, recitations, &c., till 12 noon.

(*b*) A choice between Latin, or Science, or Shorthand and Bookkeeping.

(*c*) The whole of the Form do not take the London Matriculation, but the Time Table here given is the one followed by those who take this Examination, which is parallel in standard to that of the Senior Certificate of the Central Welsh Board. Other members of the Form have special time-tables to meet the requirements of advanced Mathematics, or Senior Commercial Certificate of the C.W. Board, or of Civil Service Examinations. (It should be understood that the C.W. Board inspects and examines, orally or in writing, the whole school, but permits a large freedom in the choice of studies. Among other requirements, a Time Table such as this is sent in annually to the Board's Inspector.)

(*d*) G. C. S. = Greek, or Spanish, or Science, or Advanced Drawing, or Commercial Subjects, or other special studies.

(*e*) Two consecutive periods for Chemistry and Physics are arranged to meet the needs for practical work.

(*f*) D. or S. = Drill (for boys whose voices are broken) or Class Singing (either in choral class or tonic-sol-fa class). Physical Drill (not shown in the Time Table) is taken, as occasion requires, at the beginning of a lesson in most Forms.

(*g*) The Home Lesson (voluntary) in Scripture set, and the rest of the period devoted to the second branch here mentioned.

(*h*) "Special."—This single period provides

(1) For a few extra pursuits (Carpentry, Advanced Drawing, Theory of Music), followed by a few boys out of various Forms.

(2) For boys who are temporarily backward in some branch—*e.g.*, Oral French for most boys in their first two terms. Thus the Forms are broken up into special sets for this one period.

(*i*) *Humanities* = what are often called "English Subjects." Each Form has a correlated scheme of study in History, Literature, Geography: and in the periods assigned to Humanities, the form-master covers also the needs of English Grammar, Spelling, Handwriting, Composition, &c. (special attention being paid to these branches in the earlier years). Humanities in the Upper V. comprises the English Language and History prescribed for the London Matriculation. Physical Geography also finds a place in the scheme of Science teaching (see The School World, January, 1901. p. 12).

(*j*) *Mathematics* includes Arithmetic only in the Junior Division. Algebra commenced in the Third Forms. Theoretical Geometry in the Fourth Forms. More Advanced Mathematics in the Fifth Forms.

(*k*) A few minutes at least to French *each day*. The whole time equally distributed between French and Drawing.

(*l*) This includes Gardening.

(*m*) *Separate Time Tables* are provided for a few boys in these Forms who are prepared for Banking and other similar Examinations and who work partly in the "Special Examinations" Department.

(*n*) Home Lessons (varying in amount from ½ hour to 1½ hours according to age, are set for every evening except Friday.

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CARDIFF INTERMEDIATE SCHOOL FOR BOYS.—TIME TABLE.

		SENIOR DIVISION.				MIDDLE DIVISION.			JUNIOR DIVISION.		
	FORMS	VI	UPPER V *m*	LOWER V	UPPER IV *m*	LOWER IV *m*	REMOVE	UPPER III	LOWER III	UPPER II	LOWER II	
			London Matric. and Senior Certificate Central Welsh Board *e*	Junior Certificate (Higher Stages)	Junior Certificate (for the first time)	Chiefly Non-Latin boys		These Forms start at the beginning of the School Year with the same Scheme of Study.			Pupils under 10 years of age are not admitted into the School.	
	AVERAGE AGE		16½	14½	14½	15	13½	12¾	13	12	11	
MONDAY.	1 9.10-11.5 *a*		Maths	French	Scripture	Scripture	Scripture	Scripture	Scripture	Scripture	Scripture	1
	2 10.5-10.50		Latin or Sh *b*	Latin or Sh *b*	Maths *j*	Maths *j*	Maths *j*	Hum *i*	Drawing	French	Maths *j*	2
	3 11.0-11.45		French	Maths *j*	French	Drawing	French	Maths *j*	Hum	Maths *j*	Fr or Drw *k*	3
	4 11.45-12.30		Scripture	Scripture	Latin or Sh *b*	Latin or Sh *b*	Latin	Drawing	French	Nat Know *l*	Hum *i*	4
	12.30-1.0		After Lessons:—Piano or Violin Pupils, Detention and, occasionally, House Meetings.									
	A 2.30-3.20		G C S *a*	G C S	Hum *i*	C & P Geo.	Maths	French	Hum *i*	Hum *i*	Hum	A
	B 3.20-3.50		G C S	G C S	Science *e*	Hum	Hum *i*	Hum	Science	Sng or Hum	Sng or Hum	B
	C 3.55-4.45		Maths *j*	Hum *i*	Science *e*	French	Drawing	Hum	Maths *j*	Hum	Hum	C
	n 4.45 to lock up (5.15 or 5.30)		Piano or Violin Pupils, Detention, Extra Carpentry (voluntary), occasionally Choral Class Practice. House, Library and Reading Rooms open.									
TUESDAY.	1 9.10-10.5 *a*		Science	French	Maths	Hum	Hum	Drawing	Science	Maths	Fr or Drwg	1
	2 10.5-10.50		Latin or Sh *b*	Latin or Sh *b*	Science	Drawing	Maths	Hum	Hum	French	Maths	2
	3 11.0-11 45		Hum *i*	Science *e*	Latin or Sh *b*	Latin or Sh *b*	Latin	Maths	French	Hum	Nat Know *l*	3
	4 11.45-12.15		Maths	Science	Hum	Hum	French	French	Maths	Drawing	Hum	4
	5 12.15-12-45		D or S *f*	D or S *f*	D or S *f*	D or S *f*	D or S *f*	D or S *f*	D or S *f*	Drawing	Hum	5
	n 12.45-1.15		After Lessons:—As Monday. Reading Rooms open.									
	3 p.m.		Call over in Playfields for School Games. Carpentry for those forbidden by Doctor's orders to play.									
WEDNESDAY.	1 9.10-10.5 *a*		Hum	Science	Hum	Drawing	Hum	Hum	Science	Hum	Fr or Drwg	1
	2 10.5-10.50		Latin or Sh *b*	Latin or Sh *b*	Maths	Maths	Maths	French	Hum	French	Maths	2
	3 11.0-11.45		Hum	Hum	Latin or Sh *b*	Latin or Sh *b*	Latin	Drawing	French	Maths	Hum	3
	4 11.45-12.20		French	Maths	Drawing	French	French	Maths	Hum	Nat Know *l*	Hum	4
	n 12.30-1.0		After Lessons as Monday									
	A 2.30-3.20		G C S	G C S	French	Hum	Science *e*	Hum	Maths	Hum	Nat Know *l*	A
	B 3.20-3.50		G C S	G C S	Hum	Hum	Science *e*	Hum	Hum	Sng or Hum	Sng or Hum	B
	C 3.55-4.45		Special *h* (chiefly Mat)	Special *h* (chiefly Mat)	Special *h* (chiefly Sci)	Special *h* (chiefly Fr)	Special *h*	Special *h*	Special *h*	Hum	Manl Work	C
	n 4.45 to lock up		Piano or Violin Pupils. Detention. House and Reading Rooms open.									
THURSDAY.	1 9.10-10.5 *a*		Hum	Hum	Hum	C & P G	Hum	Maths	Drawing	Maths	Fr or Drwg	1
	2 10.5-10.50		G C S	G C S	French	Hum	Science	French	Maths	Hum	Maths	2
	3 11.0-11.45		Science *e*	Maths	Drawing	Hum	French	Hum	Hum	French	Hum	3
	4 11.45-12.15		Science	Maths	Hum	French	Hum	Maths	French	Drawing	Hum	4
	5 12.15-12.45		D or S *f*	D or S *f*	D or S *f*	D or S	D or S	D or S	D or S	Drawing	Hum	5
	n 1 2.45-1.15		After Lessons as Monday.									
	3 p.m.		As Tuesday.									
FRIDAY.	1 9.10-10.5		Science	French	Drawing	Maths	Hum	Hum	Hum	Maths	Fr or Drwg	1
	2 10.5-10.50		Hum	Science	French	French	Drawing	French	Maths	Hum	Hum	2
	3 11.0-11-45		French	Hum	Maths	Hum	French	Maths	French	Nat Know *l*	Hum	3
	4 11.45-12.30		Maths	Maths	Hum	Maths	Hum	Hum	Hum	Drawing	Nat Know *l*	4
	12.30-1.0		After Lessons as Monday.									
	A 2.30-3.20		Latin or Sh *b*	Latin or Sh *b*	Maths	Science *e*	Maths	Hum	Hum	French	Maths	A
	B 3.20-3.50		French	Hum	Hum	Science *e*	Hum	Science *e*	Hum	Sng or Hum	Sng or Hum	B
	C 3.55-4.45		Hum	Hum	Latin or Sh *b*	Latin or Sh *b*	Latin	Science *e*	Drawing	Hum	Manl Work	C
	n 4.45 to lock up		Piano or Violin Pupils, Detention, Extra Carpentry (voluntary). House and Library Rooms open.									
SAT.	1 9-5-9.55		Maths	French	Hum	Scri or Mat *g*	Drawing	Science	French	Maths	Fr or Drwg	1
	2 9 55-10.40		Latin or Sh *b*	Latin or Sh *b*	Maths	Science	Maths	French	Hum	French	Maths	2
	3 10.50-11.40 *a*		Scrip & H *g*	Scri & Mat *g*	Scri & Fr *g*	Hum	Scrip or H *g*	Scrip or H *g*	Scri or Mat *g*	Scrip or H *g*	Scrip or H *g*	3

The School, being only 2½ years old, will only reach next September to a Sixth Form (Honours Certificate Standard Central Welsh Board).

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SEASONAL NATURAL HISTORY.

A Few Suggestions for Practical Work in Schools.

By J. Arthur Thomson, M.A.
Regius Professor of Natural History, University of Aberdeen.

A SEASONAL course of natural history, continued throughout the year, has the particular advantage of being always relevant to what the pupils are seeing and feeling. Moreover, by keeping to the seasons, appropriate specimens are most likely to be got, and the help of the pupils in collecting these can be profitably enlisted. It is scarcely necessary to suggest that the course should be linked to other studies, *e.g.*, in physical geography (showing how "the seasons" come about), and in poetry (showing how the seasons affect our moods), and in history (showing the seasonal origin of many old customs and myths).[1]

I.—Spring.

The distinctive note is that spring is the season of young things, of re-awakenings, of new beginnings.

(*a*) Life History of a Frog (*Rana temporaria*).—The eggs are laid in ponds, ditches, &c., usually from beginning of March to beginning of April, and float in clumps on the water, generally 1,000 to 2,000 from each female. They are fertilised as they are laid, and will develop readily in a glass globe. The water may be sufficiently aërated by means of a few aquatic plants (*Anacharis*, *Callitriche*, &c.), but decaying matter should be at once removed. After two to three weeks the embryo is hatched, and wriggles out of the gelatinous envelope of the egg.

A study should be made of the spawn. The heavier (yolk-laden) part of the egg, with a whitish spot, is downwards if the eggs are floating freely. The experiment of fixing the egg upside down should be tried. There are many uses in the jelly—it prevents crowding, leaves between its spheres minute interspaces in which minute algæ often lie (of advantage in aëration), acts like an elastic buffer, is unpalatable to some animals, is too slippery to be swallowed by others, and is probably also of service in connection with light and heat.

Many small animals—crustaceans, insect larvæ, &c.—live along with the frog spawn, some helping to loosen the jelly, some devouring the liberated embryos.

Under the microscope (low power), or even with a hand lens, the first stages of the cleavage of the egg may be readily observed, but these occur very soon after fertilisation. The naked-eye appearance of the 2-cell, 4-cell, and 8-cell stages should be carefully noticed. The eggs of *Rana temporaria* may be compared with those of (the larger) *R. esculenta*, which are smaller. In this species the white part extends over more than the lower hemisphere. Toads' spawn should be contrasted; the eggs are entirely black, they lie in files of 2 to 4, forming long gelatinous strings. Newts' eggs should also be compared.

By isolating from day to day one of the embryos on the margin of the clump, and examining with a hand lens, a glimpse may be got of the development. The newly-hatched embryo has no limbs nor gills; the eyes are still growing out from the brain; the mouth is not yet formed. In a few days three pairs of external gills are formed, the position of the eye is visible, the food canal is open at both ends, and the larva begins to feed, having hitherto depended on its legacy of yolk. By means of a paired cement-gland, it clings to the water-weeds.

The true tadpole stage begins with the covering over of the external gills and their replacement by (4) internal gills, with the development of horny teeth on the lips, and horny sheaths on the mandibles. A dissection at this stage shows an extremely long intestine, coiled up like a watch-spring.

A third period is marked by the appearance of the limbs, the hind ones first, with the degeneration of gills and the gradual absorption of the tail, with the increased importance of the lungs, with a casting of the horny armature of the mouth and lips, with a disclosure of the eyes, and many other changes which result in the miniature frog. This must be allowed to leave the water, as it normally does about the end of May or beginning of June.

The whole process from the beginning of the individual life to the end of the period of metamorphosis takes about three months, but there is considerable variability as to dates according to the diverse physical conditions. Belated tadpoles may be found in Scotland as late as August, and may even hibernate without metamorphosis.

Tadpoles have a mixed diet, partly vegetarian, partly carnivorous. They should have water weeds to nibble at, and supplies of grated flesh in small quantities at a time. In spite of precautions securing cleanliness and aëration, they are often fatally attacked in the aquarium by an inflammatory disease (marked, for instance, by great redness about the gill region) which spreads like an epidemic. A fasting period is associated with the absorption of the tail. Cannibalistic tendencies are strong, and the struggle for existence may be vividly illustrated. The experiment of giving them a partially prepared skeleton of a small mouse to clean up should be made in a separate bowl.

Extension.—The study of tadpoles forms a most convenient basis for wider observations, *e.g.*, on niners or young lampreys, often found in large numbers in river-pools, or where a mill-lade has left the river with but little flow. A spring phenomenon of striking interest, seen in many of our rivers, is the upward journey of the young eels

[1] See Gilbert White, "Natural History of Selbourne"; Howitt, "Book of the Seasons"; Miall, "Round the Year"; Thomson, "Natural History of the Year"; Roberts, "Naturalists' Year Book," and another by J. G. and Th. Wood; Brightwen, "Rambles with Nature Students"; Mrs J. M. Wright, "The Story of Plant Life" (following the year); Cornell University, "Nature-Study Bulletins"; Mrs. Lucy Wilson, "Nature Studies."

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or elvers (the eel-fare), but care must be taken neither to repeat old fables about the eel's life-history, nor to accept as quite indisputable the modern suggestion, that the eggs are always laid in the depths of the sea, that the larvæ spend a year or two in the open sea, that they pass thence up the rivers, and that they return to the sea for breeding purposes when fully adult. The pupils should watch the persistence of the eel-fare up the river and how the march stops when the sun goes down. They should also study the movements of the elvers in a glass vessel, and see through the body-wall the beating of the heart. [See Prof. Lloyd Morgan's "Animal Sketches" (1891)].

(2) Aquatic Larvæ.—In April or later search should be made in stagnant pools for the eggs of gnats (*Culex pipiens*, &c.); about 300 are laid together and form a boat-shaped mass, which floats—moored by glutinous stuff to some water-weed. These may be transferred to the aquarium-bowl and the hatching observed. The larvæ, about half an inch long, almost black in colour, intensely active, with bristle-bearing mandibles causing a food-wafting eddy around the mouth, with a breathing-tube opening or spiracle near the end of the tail protected by leaf-like valve-plates. The larva rises to surface, hangs head downwards from the surface film, which the valve-plates pierce. Air enters the trachea, enough often to allow of prolonged submergence afterwards. Important in connection with mosquitoes, which are gnats in the wide sense, is the experiment of pouring a film of paraffin on the surface of the water: the larvæ are suffocated. Larval life lasts about three weeks, and shows three moults interesting to observe. The fourth moult leads to the pupa stage. This is smaller and lighter in colour than the larva; its external air-tubes rise from the sides of the thorax and project beyond the head; no nourishment is taken, indeed the mouth is closed. After a few days the pupa comes to the surface, the husk splits, a winged gnat creeps out, and in propitious conditions flies away.

In the mud at the bottom of a slow stream crimson "blood-worms" are common, the larvæ of the harlequin fly (*Chironomus*): this life-history may be profitably contrasted with that of the gnat. (See Miall and Hammond, "The Harlequin Fly," Oxford, 1900.) The study should be extended to other aquatic larvæ, *e.g.*, of may-flies, dragon-flies, caddis-flies, water-beetles. (See Miall's "Natural History of Aquatic Insects," 1895, and G. H. Carpenter's "Insects," 1899.)

(3) Life Histories of Insects.—From young animals in water the studies may extend to young animals on land, and observations of caterpillars are perhaps at once easiest and most instructive. Along with twigs of the plant on which they were found feeding, the caterpillars should be placed in well-ventilated boxes with glass fronts. The changes of growth and moulting may be thus observed from day to day until the formation of the chrysalis and the emergence of the butterfly or moth. From entomological dealers (who advertise in *Nature* and other periodicals) chrysalids of particular forms are often procurable. With caterpillars, the grubs of beetles, the maggots of flies, and other larval forms may be usefully compared. Some interesting experiments may be made, such as one of Professor Poulton's—placing the caterpillars (*e.g.* of the small tortoise-shell) in different boxes with walls of white, green, gold, or dark brown, and observing the colour-change which sometimes results in caterpillars and pupæ.

Starting from the first appearance of the re-awakened queen humble-bee as she flies to the willow catkins, or from the spring-cleaning of the bee-hive, the teacher may begin a study of the life-histories of ants, bees and wasps, to be completed in the summer months.

(4) Observation of Chicks.—A very profitable study, which will delight as well as instruct a class, is afforded by the behaviour of young chicks during the first two or three days of their life while they are learning their first lessons. The value of the study will be increased if, along with chicks taken for a short time from the mother, others can be procured which have been reared in an incubator and are still untouched by maternal education. The two sets may then be compared. Valuable suggestions and interpretations will be found in Professor Lloyd Morgan's "Habit and Instinct." A contrast should be made between the precocious chicks, able to run about and feed when hatched, and the helpless callow brood of blackbird or thrush. After reading Groos's "Play of Animals," the teacher will see how to utilise the facts of play as observed in lambs, kids, puppies, kittens—another fascinating line of study.

(5) Birds and their Nests.—For schools in the country the seasonal life of birds is a most appropriate and fascinating study. Every pupil should have a clear picture of the successive chapters in a year's life of a migratory bird. The study may most naturally begin in spring, when the birds are returning from their winter-quarters further south. The arrivals of swallow and cuckoo and their retinue should be chronicled, after the immortal example of Gilbert White. Without pretending that the problem of migration is easy or solved, the teacher may get many important data clear; see, for instance, the article "Migration" in Newton's "Dictionary of Birds."

Extension.—Recognition of the songs of some of the birds (helped in many cases by unusual, hitherto unsuspected, powers on the part of two or three pupils); observation of habits of nest-building and a comparison of birds' nests with other nests, *e.g.* of wasps, sticklebacks, squirrels (see J. G. Wood's "Homes without Hands"); a study of deserted nests of different types, cleaned and stored the previous autumn; an identification of the different kinds of materials (vegetable and animal) used in construction; and so on. The teacher should know Alfred Russel Wallace's essay on Birds' Nests ("Contributions to Natural Selection").

Robbing birds' nests is, of course, forbidden, but the eggs from deserted nests may be secured, and a collection of typical shapes and colours may

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be gradually formed. There is no object in having a large collection, especially since the reasons for the differences in colour remain very uncertain (see article "Eggs" in Newton's "Dictionary of Birds").

(6) Development of Eggs.—For a small senior class a most interesting and valuable lesson, or series of lessons, may be arranged on the development of the hen's egg. Ovarian eggs of different sizes may be got from the fowl which is being prepared for the table. They may be permanently preserved in spirit. Newly-laid eggs, carefully opened by cutting off part of the shell with scissors and emptied into a bowl of water, should then be studied. Sections, with a sharp knife through a hard-boiled egg with the shell removed, are worth the minute which it takes to make them. The shell-membrane and the air-chamber should be examined. Eggs should then be procured for setting, or obtained at stated intervals from the poultry yard. Day after day one should be opened and carefully emptied into water; the yolk part may be washed away and the embryo and its membranes left clear, or the embryo may be placed in a watch-glass with a little water and carefully examined with a lens or under low power. During the first six days, till the bird-characters begin to be plain, the progressive changes should be noted. The teacher should continue the observation at longer intervals and preserve a few stages in spirit for future use. Finally, the pupils should see the newly-hatched living chicks.

Extension.—In many places it is easy to get eggs of trout or salmon, which, fertilised, will hatch in a cool place if a gentle flow of water can be arranged from the tap. The mermaids' purses of dog-fish, &c., common on some parts of the coast, will stand transport by rail for a day or more if placed in a tin box with plenty of moist seaweed. To open some of the purses in class, to compare the horny egg-shell with the bird's limy egg-shell, and embryo with embryo, will make an unforgettable lesson. To those near the shore the opportunities for simple lessons in development are many:—the egg-capsules of the roaring buckie (*Buccinum undatum*), the egg-vases of the dog-whelk (*Purpura lapillus*) and the strange infant-cannibalism in both, the spawn of *Doris*, the green spawn of the green worm *Phyllodoce*, the eggs carried about crabs, ... the list is indefinitely long. In fresh-water ponds the clear eggs of the water-snail (*Limnæa*) attached in clusters to water-weed, the embryos within the gill chambers of fresh-water mussels (*Anodonta* and *Unio*), the berry-like eggs carried by the fresh-water crayfish, and so on, may be profitably studied. In all cases good specimens should be preserved in spirit or formol for revision and future use, so that a collection may gradually grow.

(7) Correlation of Nature-Studies.—As is admirably pointed out in one of the circulars of the Education Department, the early stages of Nature-Study should not be specialised into separate sciences of botany, zoology, geology, &c.; what is aimed at is a scientific outlook on the natural phenomena characteristic of the region and actually observable at different times. Therefore, it is important that the studies in animal life should be correlated with others in plant life, and both with physical studies (*e.g.*, simple studies in the meteorology of spring). Thus alongside of the study of young animals in spring observations should be made on the sprouting of seeds, the different kinds of seedlings and their behaviour, the ascent of sap, the opening of buds, the early flowers, for it is impossible to separate the plant world from the animal world.

Those living near a pond or lake can verify the important observation that there is in spring an enormous multiplication of life, beginning with the simplest plants and animals and, as it were, diffusing upwards. In winter, although there are many crustaceans, rotifers, water mites, &c., which flourish in great numbers, there is a general reduction in the abundance of life. Many animals exist only in a latent state in the form of gemmules, winter eggs, cocoons, &c. The dying away of the fresh-water sponge in autumn and the persistence of its life-conserving gemmules through the winter is a case verifiable without microscopic work. In spring, life is recruited, and even to the naked eye the appearance of the pond rapidly changes. Simple plants multiply in millions; simple animals, which feed on these, follow suit, and the influence of fresh supplies spreads upwards, *e.g.*, from crustaceans to fishes.

(8) Emotional Tone. In our northern climate winter sets a spell upon life. As Richard Jefferies says:—"For the coming of Ormuzd, the Light and Life Bringer, the leaf slept folded, the butterfly was hidden, the germ concealed, while the sun swept upwards towards Aries." But is not April the month of re-awakening, of new beginnings, of rejuvenescence? The earth opens and the seedlings lift their heads, drowsily nodding; the buds open and the leaves unfold; the flowers open and the newly-awakened insects visit them: it is the time of opening—of eggs and of the womb, of the song of birds and of the heart of man.

Unless in our studies we can do something to regain the vividness of outlook of simpler times—expressed, for instance, in the story of the return of Proserpina or in the re-awakening of the Sleeping Beauty—then we have, in greater part, missed the mark. But to have what the artistic mood calls "a feeling of the spring," we must begin nowadays (when seasonal events have ceased to be part of everyday experience) with gaining a knowledge of it. And towards this end the few hints noted above—which every teacher can develop for himself—may be found useful.

"The vast results obtained by science are won by no mystical faculties, by no mental processes, other than those which are practised by every one of us in the humblest and meanest affairs of life. A detective policeman discovers a burglar from the marks made by his shoe, by a mental process identical with that by which Cuvier restored the extinct animals of Montmartre from fragments of their bones. Nor does that process of induction and deduction by which a lady, finding a stain of a peculiar kind upon her dress, concludes that somebody has upset the inkstand thereon, differ in any way, in kind, from that by which Adams and Leverrier discovered a new planet."—Huxley.

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ON VARIOUS METHODS IN THE TEACHING OF ARITHMETIC.

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IN a text-book on arithmetic published last year, which professes to furnish so-called model answers to examination papers, the addition of simple mixed numbers is performed by turning them into improper fractions, two feet multiplied by four feet gives a result of eight square feet, and a sum is to be found worked as an example in proportion with only three terms stated. This latter abomination occurs also in a text-book which is in many respects an excellent one, and has run through several editions. A perusal of various other works has suggested to the writer of this article that a few remarks on different methods may be of service to beginners and not devoid of interest to others.

For convenience one may divide them under headings.

Subtraction.—For reasons which will be evident later when division is considered, the method of Complementary Addition is to be strongly recommended.

Multiplication.—Why should the beginner be taught any other method than that of starting with the left-hand digit? It is no harder to learn than the older rule, and will have to be adopted when he starts approximations.

To eliminate his old ideas on the subject requires time in the case of the average boy, as there is always a certain feeling of unreality attached to a novelty. It may be argued that he will very readily take to it, but in this age of pressure even minutes saved are of value, provided of course that they are not gained at the expense of soundness.

Division.—The Italian method by which remainders only are written down considerably reduces mental exertion, and tends to greater rapidity in working than the English one, to say nothing of its importance in Physics. The writer has unfortunately never taught division to a child, but has had in various forms many foreign boys by no means more intelligent than English ones, who appeared to have had no difficulty in acquiring the art, and always work with accuracy. He speaks subject to correction, but certainly thinks the method worthy of trial in all schools where it is unknown. The results would be of interest to teachers. Of course, it is understood that "complementary addition" will be used in writing down the remainders.

Highest Common Factor.—The more rational way to teach H.C.F. is by means of factors, and the practice obtained in factorisation is of inestimable value; yet most text-books and many masters lay but little stress on it. It is true that we must have occasional recourse to the old method of division by remainders, but even so we have smaller divisors after preliminary factorisation.

Again, if the boy is to understand the rule he must be carefully shown that every remainder contains the H.C.F. as a factor. If he is taught at the same time to discard each factor of the various remainders which is not a factor of the numbers given, and divide by the quotient, he lessens his work by half, acquires greater accuracy, and a thorough comprehension of what is otherwise a mystery.

Yet this is scarcely mentioned in any of the existing text-books. Moreover, L.C.M. is chiefly done by factors, and the more practice he gets in them the quicker he will work out all problems depending on proportion. Now is the time to make him expert in seeing what numbers will divide others, the lack of which renders him so slow later on.

Fractions.—In passing, one may reiterate the absurdity of adding mixed numbers by turning them into improper fractions. [The boy who does this will also take three lines to multiply $1\frac{1}{2}$ by 4.] Perhaps its advocates would tell us that as he will have to turn them thus in multiplication and division of one fraction by another he may as well do so always. The advisability of always following the line of least resistance is, however, questionable; it often yields results quickly, but accompanied by a loss of mental power. One would think the ancient method of doing complex fractions in bits was dead by this time, but instances of it are not uncommon. Evidently some masters think that orderly arrangement is of no importance in arithmetic, and that it does not matter how you get answers so long as they are forthcoming. As mental work in fractions requires constant practice and is so essential, a collection of fractions such as

$$\frac{\frac{2}{5}}{1+\frac{2}{5}}, \quad \frac{\frac{3}{4}}{1+\frac{3}{4}} \text{ &c.,}$$

to be done at sight by multiplying the numerator and denominator in each case by a single number, might with advantage find a place in the text-books. We might then be spared occasional glimpses of the following:—

$$\frac{3}{4+\frac{1}{5}} = \frac{\frac{3}{1}}{\frac{4}{1}+\frac{1}{5}} = \frac{3}{\frac{4}{1}+\frac{1}{1}\times\frac{1}{5}} \text{ &c., } ad\ infinitum.$$

To illustrate more fully the best way of working complex fractions, take the following example:—

$$\frac{5}{4+\frac{3}{3+\frac{2}{2+\frac{1}{1+\frac{1}{8}}}}} = \frac{5}{4+\frac{3}{3+\frac{2}{2+\frac{8}{8}}}} = \frac{5}{4+\frac{3}{3+\frac{16}{17}}}$$

$$= \frac{5}{4+\frac{17}{211}} = \frac{105}{101} = 1\frac{4}{101}.$$

Some boys would devote two pages to this sum.

Decimals.—Here the utility of starting multiplication with the digit of highest value is evident. Also "place the units digit of the multiplier under the right-hand digit of the multiplicand; then the first figure in each product by a digit is under the multiplying digit; and the decimal point in the product is vertically under the decimal point in

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the multiplicand." This is surely more scientific than the old rule of multiplying as if we had whole numbers, and counting off the necessary number of places in the product. The latter makes the beginner lose sight of local value, and consider decimals as unreal things. It also leads him to think that the "wretched dot" may be dispensed with at pleasure, wherefore he is much surprised to find that $\cdot 072 \div 8 = 9$ or $\cdot 9$ is wrong. In this connection it may be mentioned that it is of importance that the learner should clearly understand that a digit increases its value ten times whenever it moves one place to the left, and *vice versa;* if he grasps this, he will not want to learn, parrot-like, the old rule of moving the point. A clear understanding of the importance of local value is the key to the mastery of decimals. It is for the same reason that it is advisable not to teach division by subtracting the number of places to get the position of the units figure in the quotient, but rather insist on the divisor being made a whole number in all cases.

In the reduction of one quantity to the decimal of another quantity, if we tell the boy to reduce both to the same name and divide one by the other independent of whether the second quantity is simple or complex, we may save time in explanation only to find more wasted in the cumbersome working out of such a question as—reduce £2 5s. 4½d. to the decimal of £25—by a long division process rather than a short one.

Proportion.—Let us hope that the old Rule of Three will be decently buried never to rise again, though, as previously noticed, it is still far from being a corpse. Now comes the question which is open to much consideration. Shall we use the Rule of Unity, the $a:b::c:d$ method, or some other? The Unity method is a rational one, and is of great importance in making the working of problems clear, and also tends to develop the reasoning power of the child, but as he proceeds he often finds it cumbersome, and by its constant use the all-important idea of Ratio is obscured, or perhaps never acquired. Nearly all text-books begin with reduction to the unit with the exception of some of the older ones, which solve all the questions by the four terms of a proportion. Is he therefore to use it always? If not, how long must he hold to it?

To come to some conclusion we must consider the proper stage at which he ought to be asked to try simple problems on proportion. Very simple ones can be given at the earliest opportunity after the simplest fractions have been done, and are useful as a means of developing reasoning powers; also by applying to concrete examples his elementary notions of fourths, fifths, &c., he gradually acquires a clear conception of their meaning. After that it seems to the writer that harder problems are best left till fractions are thoroughly understood, and more particularly the reduction of one quantity to the fraction of another. The subject may now be discussed at length. By copious illustrations the class may be made to grasp the meaning of direct and inverse proportion, and asked to supply examples from their own experience and suggest easy sums. After this ask a few simple questions such as—if 4 men earn £1, how much will 8, 12, 2, 1, 6, &c., earn? They will readily answer that as 8 men are twice 4 men, they ought to have twice as much; 2 men are half of four men, half as much; with a slightly longer interval for reflection, 6 are 1½ times four, therefore 1½ times as much.

The query may then be put, what fractions are 5 things of fifteen, seven of 42, 18 of 6, &c., leading up to others not so simple, as 19 of 8, 7 of 15, and so on? Having gone through this drill, write down a problem such as, if 13 cwt. cost £6 10s., what will 50 cwt. cost? Is it direct or inverse proportion? What do you want to find? What fraction of 13 cwt. is 50 cwt.? If so, what fraction of £6 10s. ought it to cost? Then the sum is written

13 cwt. cost £6 10s.
50 cwt. cost $\frac{50}{13}$ths of £6 10s.
$= \frac{50}{13} \times \frac{13}{2}$ £, &c.

After this it is wise to give another problem in which the number of articles the cost of which is required is less than the number whose cost is given, to make sure that the reduction of one to the fraction of the other is thoroughly grasped. [There are always some preternaturally sharp boys one learns to dread who jump to conclusions, and because the bigger number is top in the first instance, imagine that therefore it is always so.] They then begin to see that everything turns on seeing what fraction one quantity is of another; in other words, they slowly but surely imbibe the idea of ratio. The impossibility of comparing two different kinds of articles is to be emphasised, as this is of the greatest importance, and prevents false reasoning in Interest and Profit and Loss, and thus clear conceptions of ratio are formed. Henceforward they must be forbidden to reduce to the unit. It takes a little longer to teach than the Rule of Unity, but against this must be set the fact that it makes the work less mechanical, and ensures a future gain in quickness.

Inverse Proportion is to be treated similarly, and only requires a little patience. One well-known book sets out the working as in the above sum, but reasons differently. "Do the reduction to unity mentally," is the advice; that is, in this case, put the 13 underneath to bring the cwt. to unity, and then multiply by 50. But this does not seem to bring out the meaning of ratio. Once this meaning is grasped, the working of all sums relating to principal, time, rate, present worth, stocks, &c., can be set out in the same way. Thus:—

Principal which amounts to £120 is £100.
" " " £480 is $\frac{480}{120} \times$ £100.

Ratio is emphasised still more here, attention being directed in every case to an examination of the fraction $\frac{480}{120}$ in order to see whether both quantities are of the same kind, and thus correct.

Time and rate sums may be worked on ratio as comparisons of two interests, and it seems advisable to treat both in a similar way; that is to say,

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find the interest for one year or one per cent., as the case may be. Youths still exist who work out all these sums from the formula $T = \frac{P \times n \times r}{100}$, and strange and amusing answers are the result.

Present Worth and Discount sums, Profit and Loss, Stocks, all follow easily from ratio, and the method here stated cannot be too strongly insisted on.

Many points have been, of course, left untouched, as it would be impossible to dwell on all in the course of a short article; but with a final plea for the treatment of all compound interest sums by means of aliquot parts, these stray comments, the outcome of many years' experience of teaching, are submitted for consideration in the hope that they may not be found superfluous.

THE TEACHING OF ENGLISH COMPOSITION.

By M. P. Willcocks.
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COMPOSITION, or the art of self-expression by means of words, has hitherto in England occupied the proverbially unsafe position of that which halts between two stools, the two stools being literature and grammar. Correct composition implies, first, a mastery of certain laws of technique which are learnt in the grammar lesson, and, second, of certain laws of taste which may be understood by reading the works of the great masters of self-expression by words, *i.e.*, in the literature lesson. Consequently it has been tacitly assumed that, given adequate grammar and literature lessons, the child needs no more, facility and correctness in composition must follow as a matter of course. Every examiner, every teacher, knows that, in the case of the average child, the desired result does not follow; where, then, is the fallacy of the assumption that grammar and literature lessons teach composition? Evidently in this: that neither in the grammar lesson nor in the literature lesson, as ordinarily understood, has the child learnt to combine in one concerted whole the rules of taste and technique which he has been studying piecemeal. The effects which may be produced by correctly worded sentences massed in suitable and logical paragraphs, and the method of obtaining these effects, must be taught by a special series of lessons which may, if the exigencies of the time-table demand it, be compressed into the odd corners of the literature or grammar lesson, but which must be systematically handled by the teacher. Taking a school divided into six forms, what is the step which can be suitably allotted to each form on the way towards the mastery of expression, with due regard to the psychological development of the normal child's mind?

In the first form, containing children of ages varying from six to eight, the start must be made with a story, and with a story of a particular kind, dealt with in a particular way. The teacher should first tell, slowly and emphatically, a tale in which the bare outlines are interesting and striking. Such stories abound in the literature of the childhood of the race, *e.g.*, in Scripture, in Homer, in early English history, in Norse or Greek mythology. The special point to be observed is that no incident in the story should be introduced by the teacher which it is not desirable that the child should reproduce. For this reason the tales chosen should be very short. Then, in the first lesson, the children should themselves repeat the story sentence by sentence, each child composing one, while these sentences, as given by the child, are written by the teacher on the board. Finally, the whole should be read aloud from the board and freely corrected both by teacher and children, the only technical point introduced being the use of the comma and full stop. With average children this kind of lesson is full of interest, and an astonishing quickness is gained after a little preliminary hesitation. It is, of course, unnecessary to devote all the lessons to board writing, because each child will soon be able to write a fairly correct version of a story told him in an exercise book.

In Form II. the place of read literature begins; there is a great gulf between the intellectual power needed to grasp a story told and that required in mastering it when read. In the first place, the story is modified unconsciously by the teller of it in order to suit the comprehension of the listeners from moment to moment; in the second place, the very tone of reading, as distinct from telling, adds a new difficulty. The substance of the story read should be told afterwards by the child in his own words, at first as a united effort of the class, on the board. In technique long sentences must be stopped, the number of "and's" and "so's" severely curtailed, and the use of the relative sentence taught. Ballad poetry is most suitable for this stage; for example, "Young Lochinvar," "Sir Patrick Spens." Fables may be taken from Æsop, stories read from "Heroes of Asgard," or from any good collection of short fairy tales.

In Form III., ages eleven to fourteen, the new element introduced should be description, first used apart from story-telling, then in conjunction with it. Description, of course, begins with observation and classification. The child should first merely enumerate all the objects he sees in the school-room, in the next he should classify all the articles in a remembered room; in this way he will be encouraged to exercise his powers of visualisation, without which no power of imagination can exist. The next stage would be a written description of a room, either remembered or actually before the eyes at the time. Lastly, he should reproduce in his own words a description read by the teacher from a great author; for instance, a passage from "The Lady of the Lake," or, with a very bright class, Bunyan's "Valley of the Shadow." Descriptions of "ideal" and imaginary rooms, houses, landscapes or of pictures may be used as exercises. Ultimately each child should

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try to tell a story, bringing in a certain amount of description in correct proportion; in this way he will learn to fix his attention on the salient points of a narrative and to distinguish between essentials and non-essentials, perhaps the most valuable lesson in the whole course. The use of the colon, semi-colon and dash belongs to this stage.

In Form IV., ages fifteen to sixteen, the construction of stories by the child himself should begin; of course, by way of autobiographies—of animals, coins, &c. Here, too, belong descriptions of scenery, not reproduced, with deliberate aim at producing a certain æsthetic effect in each, as of peacefulness in a sea-scene, of loneliness in a moorland scene. Subject essays should begin here, topics being chosen at first that may be dealt with from points given in the history or science lesson. In technique correct paragraphing should be attempted.

The abstract essay should be kept for Form V., where construction proper in essay writing should begin. The teacher must insist first on the logical arrangement of thoughts, and to obtain that, the habitual preliminary jotting down of all points that occur to the pupil in connection with the subject. The various subjects of invention of topics, of selections from them, of the order in which they are to be treated, and of the choice of suitable diction, must each be specially taught by examples taken from prose literature.

Finally, in the VIth. Form the question of style, of Latin or Saxon idiom, of familiar or scientific diction, should be dealt with, always with occasional comparisons between the work of the pupil and that of a great master. This, of course, should be done with careful precautions to choose writers of diverse styles and utterly different diction, in order to avoid anything like echoing a style. For all through the course the teacher must keep before the taught the notion that the aim of all composition is the expression of the writer's personality.

PREVENTION OF INFECTIOUS DISEASE IN SCHOOLS.

By C. E. Baddeley, M.D. (Lond).

III.

School Furniture and Routine.

(*Continued from p.* 57.)

HAVING attained a schoolroom properly constructed and satisfactorily lighted, warmed and ventilated, the next point to consider is the necessary furniture. This should be of the simplest possible construction and strictly adapted to its special purpose. All tables, chairs, desks and forms should be made of plain hard wood and iron, and polished or covered with some impervious material. The relative heights of the forms and desks and the slope of the latter are of importance to the health and comfort of the scholars during their work. Many excellent varieties of such furniture are now in the market from which selection can be made.

Shut-up desks and lockers should as far as possible be avoided as tending to the accumulation of dust and rubbish.

All maps and diagrams affixed to the walls should be easily removable for cleaning, and books and other materials should as far as possible be kept in lockers in another room or lobby.

Before opening school in a morning the temperature of the room should be noted and entered in a book, and the fires and ventilating apparatus regulated accordingly. After afternoon school the floor should be damped and swept, and the furniture dusted and windows opened. Once a week the floor should be scrubbed and sluiced with an antiseptic solution such as five per cent. of crude carbolic acid in water, and dried with an india-rubber squeegee. At stated intervals the whole room should be thoroughly cleaned, perhaps at the end of each term. The walls and ceiling should be brushed and the ventilating shafts, both inlet and outlet, overhauled, and the chimneys swept, and the windows, woodwork, furniture and floor thoroughly cleaned.

School Offices.

I have spoken of the schoolroom as a unit, and where there are more than one the same rules are applicable; but dormitories, dining-rooms and studies involve different considerations, which have been treated of by Mr. Shelly (July and August, 1899) and need not be mentioned here. Every school requires for the convenience of its scholars certain offices—closets, urinal, lavatory, &c., and the proper disposition and construction of these has an important bearing on the health of the school. Although insanitary conditions cannot be said to be a direct cause of infectious disease, they produce and perpetuate a condition of health in those exposed to them which render them specially susceptible.

Only a few general rules can be indicated here for the disposition of these offices, which must necessarily depend in detail upon the special circumstances of each school. In all cases the offices should be under a separate roof from the schoolroom, and have an entirely separate system of ventilation.

The drains should be properly designed and constructed, and efficiently ventilated, and disconnected by a proper inspection chamber from the sewers. Where there is a sufficient water supply water-closets with automatic flushing-pans may be provided, or it may be necessary to use dry-earth closets where water supply is of insufficient pressure. The urinal should also have an automatic flushing arrangement, or otherwise it should be sluiced daily with a solution of five per cent. carbolic acid in water. Middens and underground cesspools are in all cases to be avoided.

Lavatories for common use are not to be commended in schools, and should be limited to wash-hand basins. Towels also for common use are highly undesirable, as are also hair-brushes and combs.

The *sewage disposal* of a school will depend upon

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the facilities of the district; but whether opening into the public sewers or into a main drain, the sewage from which is treated independently, the school drains should all pass through a properly constructed inspection chamber, and underground cesspools are to be avoided.

The drains of a school and its offices should be of glazed earthenware pipes of proper size and laid with a good fall, and the joints cemented with water-tight cement. They should all open into one or more inspection chambers, and their upper ends should be outside the walls of the buildings and a ventilating shaft placed there. They should never be continued under the building, and, as far as possible, should be laid in straight lines. All *grids* outside the building should be trapped, and all soil pipes have a ventilating shaft. Such drains, when not in actual use, should be *empty*, and a current of fresh air should pass through them from the inspection chamber to the ventilating shaft.

The *water supply* of a school must be plentiful and of good quality, and there should be sufficient pressure to carry it to all parts of the building where required, and it must be protected from all sources of organic pollution, especially surface contamination, otherwise it may become a direct vehicle of infective organisms, especially those of typhoid fever and cholera. The surface of the ground in the vicinity of the school should be kept clean and dry but free from dust, and all schools require a rigid system of conservancy.

INSPECTIONS.

In addition to the measures adopted to preserve the general good health of a school, a vigilant watch must be kept to detect the introduction of infectious diseases from without. However perfect the sanitary arrangements of a school may be, there will almost certainly be an epidemic outbreak if a child suffering from such a disease as measles or whooping cough is permitted to remain for even a few hours in the schoolroom.

To detect the introduction of disease *systematic* and *periodic inspections* should be made of all children attending a school. These inspections should, if possible, be made by a *qualified medical practitioner*, and if not, by some other responsible person, and to be effective they should be made at frequent intervals and conducted on a definite plan. Once a week may be often enough for a general inspection, but in addition to this any suspicious cases should be at once reported and examined. At every inspection each scholar should be examined as to:—the scalp for ringworm, vermin or any skin eruption; as to the face and neck for swelling or enlarged glands, or discharges from the eyes or ears, or rash on the skin; as to the throat for redness or ulceration or enlarged tonsils, and the condition of the tongue is a good indication of the condition of health; as to the *skin* for the appearance of any rash; and a practised observer from the feel of the skin will often detect any rise of the *body temperature*, and, if any such rise is suspected, use should be made of the *clinical thermometer*.

Particular notice should be taken of the character of the breathing and the presence of cold in the head or cough, and when the latter is present its character, whether spasmodic, laryngeal or bronchial, and whether there is expectoration, should be noted.

Note should be made of the condition of the appetite and the condition of the bowels, especially the presence of diarrhœa. An inspection of the hands should be made for the eruption of itch, especially between the fingers, and the condition of any cuts, wounds or bruises noted.

If an inspection on these lines reveals nothing abnormal, the child may be reasonably supposed to be free from infectious disease. Such an inspection need not occupy much time or involve much inconvenience to the scholar in removing clothes, &c., and may be made individually or by classes, so as not to interfere with the other work. Should an inspection reveal any *suspicious symptoms* in a scholar, careful note should be made of their character and extent and the apparent time they have existed, and the time the scholar has been attending school.

The case should then be sent for proper observation and diagnosis, and should it turn out to be a case of infectious disease, a specially sharp watch should be kept for the appearance of similar symptoms amongst the rest of the school, and any scholar exhibiting such should be similarly sent for observation. When a case of infectious disease has been detected, and there is reason to suppose that there is a probability of others having contracted the infection, several points have to be remembered. The infection of many diseases require *time to develop* before any symptoms show themselves. This time is called the *period of incubation* and varies in different diseases, from a few hours to as much as fourteen days; during that time the individual is not capable of *actively disseminating* the disease. The time at which the first symptoms appear is known as the *period of invasion*, and it is from this time that the *age of the disease* is calculated and the power of actively conveying infection is supposed to date. The *infectivity* of different diseases varies largely, as well as the *susceptibility* of individuals. In the case of such diseases as measles and whooping cough, the detection of a case which has been in school for even a few hours will almost certainly be followed, in due time, by other cases, whereas if a case of diphtheria or scarlet fever be detected in an early stage and promptly removed, there is a reasonable probability that no other scholar may contract infection, and the detection of a case of typhoid need cause little fear of an epidemic, unless it is proved to have been contracted within the school. The detection of a case of itch may demand the destruction of books and other materials, and the cleansing and disinfection of desks, brushes and towels with which the pupil may have been in contact.

The following symptoms may be regarded as sufficiently *suspicious* to justify a scholar exhibiting any of them being placed under *observation*.

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Scalp.—Vermin as evidenced by "nits." Ringworm by dry, scaly eruption, with short, broken hair easily pulled out or bald patches. Eczema by moist or pustular eruption.

Face and Neck.—Most rashes and eruptions about skin. Swellings about ears or neck and discharges from eyes or ears, especially if purulent.

Throat and Tongue.—All forms of sore throat, especially with feverish symptoms. Enlarged or reddened tonsils, or white or yellow patches on palate or in throat.

Respiration.—Colds in the head are frequently of an infectious nature, and the earliest symptoms of such diseases as influenza, whooping cough and measles are not to be distinguished from such. A schoolmaster may therefore well consider whether he should not exclude for observation cases of acute "cold in the head," especially when these diseases are prevalent. Cases of cough, with expectoration or spasmodic cough, should also be looked upon as requiring accurate diagnosis.

Digestive Organs.—Sickness and diarrhœa, especially if there are feverish symptoms, are suspicious of intestinal infection, such as typhoid fever, cholera, and other diseases caused by infected food or water.

Skin.—Almost all forms of rash and eruption of the skin are to be looked upon with suspicion, until certified to be of a non-infectious nature.

It may be urged that such a system of inspection would be very irksome, both to the schoolmaster and the scholars, but the occurrence of infectious disease in an epidemic form, necessitating, as it often does, the compulsory closing of the school, is a far more serious matter for both, and if it can be shown that its occurrence in such a form can be checked by these precautions, a certain amount of trouble and expense is amply justified. That such is the case is amply proved by the comparative immunity from epidemic outbreaks enjoyed by schools where precautions are adopted, over those where no such measures are made use of, and quite irrespective of the class of children attending the schools. The susceptibility of young persons to certain infectious diseases is so great, and the infection of these diseases is so widespread, that it has come to be looked upon by the laity as almost a necessary part of a child's existence that it should endure an attack of these diseases, measles, whooping cough, and others. But this is entirely a fallacy, and although in the great majority of cases recovery follows an attack, and there is subsequent immunity, there is in the aggregate a large annual mortality directly due to each; and many of those who recover only do so with permanent damage to the lungs, which more or less incapacitates them in after life. This is especially the case with whooping cough.

"In the case of those that are weak physically, furtherance of health, combined with persevering patience, is the first and chief duty. But kindness should not degenerate into weak indulgence; on the other hand, close supervision must take the place of every form of harsh treatment."—Herbart.

COMMON EXAMINATION ERRORS.

IV.—French.

By Cloudesley Brereton, M.A. Cantab., Licencié-ès-Lettres.

(*Concluded from p.* 84.)

EXAMINATION papers are generally divided up into sections labelled Accidence, Syntax (which is closely allied with composition, and in fact only differs from it when the *raison d'être* of any example is demanded), Translation and Dictation. These, of course, are not thereby to be taught as if they are distinct parts, though some headmasters occasionally give the composition to one man and the translation to another. On the contrary, even when the reading-book is not adopted as the centre from which all these different branches spring, it is obviously a great advantage to make the translation and composition play into each other's hands. I will therefore conclude with a few selected errors which occur pretty frequently in the various sections.

In accidence, the irregular plurals even of the most common words, such as those of *œil* and *ciel*, are often incorrectly given. Here is a good instance where such words should be *mis à l'amende;* their exceptional plurals are barely fair to set in an elementary paper. Passing over the thorny subject of *noms composés*, we arrive at the adjectives; here, of course, one of the words most blundered over is *vieille*. Examiners seem never tired of ringing the changes on the comparatives and the adverbs derived from adjectives, or *vice versa*. Certainly their assiduity is rewarded, as candidates show a marked tendency to get switched off from *petit* on to *pire*, and between *pire* and *pis* there is a good deal of confusion. In cardinal numbers, 71 is perhaps the best number with which to catch the unwary napping; they forget *et* is necessary up to that point. In ordinals the fifths and ninths will generally find a weak spot in the spelling of some. The 21st also has its victims. Pronouns contain numerous pitfalls. "His aunt" will trip up the beginner unacquainted with *sua*, and some classical boys will persist in using the same word to translate *leur*. The plural of *le nôtre*, the feminine of *le leur*, will always entrap the arrantly careless. The relative is parlous ground even to stronger candidates; *de que* is not unknown, and the accusative of *qui* (interrogative) is likewise a stumbling-block. Not a few find it difficult to discern between *chaque* and *chacun* till the derivation is pointed out. Omitting errors already specified, we find that *soyant* is not unknown for *étant*, *été* has been found to take the sign of the plural, while the imperative and present subjunctive of *avoir* are not infrequently wrongly spelt. Even the imperative second person singular of *aimer*, if demanded with other imperatives, will be found with an *s*, which does not belong to it, while the third conjugation, especially with a verb that takes the cedilla, is sure to "dish" a fair percentage. The

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arrantly careless put none, and the careless put cedillas throughout; and yet it is easy enough to learn that the hard vowels are *a*, *o*, *u*, and this knowledge also helps one to insert *e* as a fender between *g* and one of them in the verbs of the *manger* type. As for *aller*, and above all, *s'en aller*, they are the *loci classici* of every paper. The latter is a fair subject for frequent setting, for it is a thoroughly common verb. *S'asseoir* also works considerable havoc, and *faire*, the commonest verb in the language, has usually a goodly tithe of victims. But there are at least twenty irregular verbs which, considering how frequently they occur in translation, candidates do not conjugate as they should. A double-barrelled question in verbs like *jeter* and *appeler* will sometimes prove fatal to a candidate with the second barrel. The difference between *comme* and *comment* is too rarely known. French grammar questions of recent years have been happily purged of much of the jargon of the older grammar-mongers, and such words as *apodosis* and *protasis*, which are tolerable only in classics in which they explain themselves, are, it is to be hoped, being gradually shunted. That "blessed word" *euphony*, however, still remains. The grammarian's usage of it as a *deus ex machina* is often ludicrous enough, but the average pupil invokes its intervention on all possible occasions in which explanations are requested. Happily, however, there are gleams of better things. One candidate in a recent examination, whose spelling was not so strong as his logic, made the pithy remark that "the apostrophy (*sic*) in '*grand'mère*' was a grammatical error due to grammarians." Such a comment is calculated to make Quintilian and those of his tribe gape and stare, but personally one regretted one could not award extra marks to the candidate.

In syntax and composition the field of error is immense. To cite only a few instances in which candidates may blunder: the use of *avoir* and *faire* to translate the verb "to be" in certain cases; the insertion of the article before abstract nouns, its omission before the second of two nouns in apposition; its use in place of the English possessive pronoun; all questions connected with time and dates; the negative after *personne;* the various translations of "this," "some," "other," "another," "both," "so," "more," "indeed," "why," "right," "wrong," &c., and of the verbs to "have, call, walk, ride, to put, set, go," when in conjunction with prepositions; the order of the words after "whose," when the noun depending on it is in the objective case; after *toujours*, *encore*, *peut-être*, at the beginning of the sentence, or after "how" with an adjective and the verb "to be," or the position of "enough" in the phrase "good enough," or of *tous* when a pronoun, or of the adverb with a verb or auxiliary; the translation of expressions and phrases like "very much," "on Tuesday," "on Tuesdays," "on his arrival," "more than twenty books," "which of the two?" "twenty feet long," "can you swim?" "here I am," "he, he is a fool," "since I have been here," &c., "butter is selling," &c. "too clever to," &c., "with his hat in his hand," "Fire!" "the dickens of a story," "the day he died," "a friend of mine," "what a fearful noise!" &c. But one might go on for ever. Then there are the idiomatic uses of such words as *bien*, *tout*, *que*, *gros*, *fort*, *plein*, *sens*, *part*, *heure*, *affaire*, *coup* (a veritable blank-cheque word), and the verbs *aller*, *gagner*, *faire*, *tenir*, *changer*, &c., and the preposition used after verbs and adjectives which take *à* or *de*, and the verbs that take no prepositions, and the rules for the subjunctive. Judging from the standard of connected prose shown up in examination, it seems that it is often too rarely practised in schools. Candidates will correctly render the order of such words as "I have met him" in a short phrase and neglect it in the connected piece, thereby showing they have not been sufficiently trained to apply their knowledge.

In translation the chief defect of the majority of papers is a too great literalness and baldness which shows their style has not yet been sufficiently "despoiled of Gallicisms." This defect finds its fullest expression in the misrenderings of the feeble-minded candidate who, following the line of least resistance, takes the nearest English word in appearance to the French, and sets it down quite oblivious of the context. Thus *carte* looks like *cart*, and down it goes; *collines* resembles *column*, and as "column" it is written. Such things are the infancy of conjecture, which should not, however, be snubbed, as it is by some teachers, but encouraged. Tell the pupils it is a game of the missing word, and they will soon grow keen; above all, teachers should analyse mistakes. They should not blame the half-wrong answer, but point out where it is half right and praise it. Thus the pupil who translated "*la carte fut étalée sur l'herbe du chemin*" by "the map was printed on vegetable matter," lacked knowledge but not imagination, as he explained that "*l'herbe du chemin*" meant "the herb of the way—common herb, *i.e.*, vegetable matter, parchment." And another who translated "*ordonnance de non-lieu*" by "*alibi—not there, not on the spot*," was probably a brighter boy than many who had got up their prepared books more carefully and correctly rendered the phrase as "no bill." For they often spoilt it by explaining it meant "nothing to pay," which showed that the English equivalent had probably never been explained to them, and they had merely translated from one unknown term into another. A large number, again, in a passage from a book on Corsica, translated "Marquis de Mascarille" as if it were *màquis*; no doubt many had been allowed to pronounce the two words alike, and careless reading did the rest. The weakest part of a paper is generally the rendering of idioms or the explanation of the grammatical difficulties. Man is not born a logician. Under this head come the phrases with two or more renderings, such as *chez moi* (3), *tout à l'heure* (2), and the translation of such comparatively difficult words as *sérieux*, *gentil*, or phrases like *nous n'avons pas grand'chose à faire*, *tout en riant*, *à qui mieux mieux*.

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In dictation lists may be collected of words which are similar to English ones, but not identical, such as *mariage*, *exemple*, *caractère*, *candidat*, &c., the groups of words which end in French in *illon*, like *postillon*, or double the consonants, as "cannon*n*ade," or those whose termination is "*ment*," which in French is always preceded by a vowel, while there are always plenty of stumbling-blocks of the type of *plusieurs*, *cueillir* and *vieille*, which are generally spelt wrong, not to mention the words that are identical in sound, like *cinq*, *saint*, *ceint*, *dessin* and *dessein*, *hôtel* and *autel*, &c., or those which an Englishman often confuses, as *en* and *on*, *bonheur* and *bonne heure*, *âme* and *arme*, to which their ear ought to be trained. It is not a bad plan to make the pupils correct each other's dictation, and on the resumption of their own copies allow them for every mistake they find uncorrected double marks, which are taken off their corrector. This encourages them to correct carefully, impresses the words of the piece on their mind, and teaches them accuracy.

Some readers may think that too much has been said about teaching, and that the articles should have dealt exclusively with examinations. That is, however, not the writer's view. In the belief that the whole *raison d'être* of examinations is the *proving and improving* of teaching, and that the ideal examination is that which accomplishes this with a minimum of dislocation to the real progress of the class, a humble attempt has been made, not to suggest likely "tips" to those who desire to pass as many pupils as possible, but to throw out hints which, even if they do not immediately "pay" by appearing in the next examination paper, will, on the other hand, assist in a slight degree those teachers whose ideal is to send up candidates who have been thoroughly grounded rather than superficially crammed.

THE SIMPLIFICATION OF FRENCH SYNTAX.

Alterations Approved by the Academy.

THOSE who have followed the course of events will be prepared to find that the revised version of M. Georges Leygues' French-grammar rules differs considerably from the original *arrêté* of July 31st, 1900. There is also another very important difference between the present *arrêté* and the former one, and that is that now the rules are issued with the consent of the Academy. Still, however, the original plan of putting everything forward as a *tolérance* is adhered to, and one cannot help feeling that a good many people will benefit by the permission to abide by the old custom.

As most of our readers know, little importance could be attached to the ministerial decree until the Academy had reported upon it; therefore we have refrained from publishing a translation of the document which several public examining bodies accepted with unnecessary haste. But now that the Academy's report is available, it is time to describe the simplifications which have received sanction.

As every modern-language master knows what the first edict contained, we may pass on to consider the omissions and alterations found in the new one. Two large sections are cut out, viz., that on compound nouns, which are still to be declined in the illogical fashion that offers so many chances to the examiner, and that on the agreement of past participles. Here, however, there is comfort, for though the ordinary rules for the inflexion of past participles with *avoir* and *être* remain the same, we have some license allowed us when an infinitive or a participle depends on the past participle used with *avoir*.

The other omissions are: any mention of *Témoin*, *Œuvre*, *Période*, *Tout* (as adverb inflected before a feminine adjective); the genders of *Aide*, *Garde*, *Manœuvre*, *Couple*, *Merci*, *Relâche*; the plurals of *Aïeul*, *Ciel*, *Œil*, *Travail*, and the use of *en* or *au* with names of countries.

Some slight alterations have been made in certain remarks:—*Aigle* may be masculine, except when it denotes a military standard. It is not stated that an adjective qualifying several nouns may agree in gender with the nearest. *Avec* is no longer included in the number of those connectives of subjects after which the verb may be in the plural, though the example, *Le général avec quelques officiers sont sortis*, or *est sorti du camp*, is retained. With regard to sequence of tenses, the present subjunctive is admitted after the conditional present. The older rules gave conditional alone.

In spite of these omissions and alterations, the changes still sanctioned are far-reaching and really valuable. The suppression of *ne* in the subordinate clause; the admission of such a construction as *L'an mille huit cents quatre vingts dix*; the disuse of various apostrophes and hyphens; the clear ruling on the correctness of *Les deux Corneilles*, *Instruites par l'expérience les vieilles gens sonts soupçonneuses*, *Remettres ces livres chacun à leur place*, are so many helping hands held out to students of French.

The time saved by the abolition of *bizarreries et pièges orthographiques* will, M. Georges Leygues hopes, be given to the study of standard authors, a hope that we must all share. In conclusion we may quote M. Georges Leygues' words: "Je vous prie de prendre les mesures nécessaires pour que l'arrêté ci-joint soit mis immédiatement en vigueur."

The rules given below are only very slightly abridged. In some places, where illustrations of former usage were given, the examples have been omitted. It must not be forgotten that the old rules still exist, and will be adhered to by many. The new rules are "official," but not popular.

The following are the rules as given in the *Journal Officiel* of March 11th, 1901:—

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Substantives.

Use of the plural or the singular. In all constructions, in which the sense allows of the complementary noun being considered as either singular or plural, either number may be employed: *Des habits de femme(s). Des confitures de groseille(s). Des Prêtres en bonnet(s) carré(s). Ils ont ôté leur(s) chapeau(x).*

Substantives with two Genders.

AIGLE may be considered masculine, except when it denotes a standard: *Les aigles romaines.*

AMOUR, ORGUE, may be considered masculine in the singular and common in the plural: *Les grandes orgues*, or *Un des plus beaux orgues. De folles amours. Des amours tardifs.*

DÉLICE, DÉLICES, need not be touched on in elementary teaching.

AUTOMNE, ENFANT, are common gender, and call for no special attention.

GENS, ORGE.—The adjective may in all cases agree with *gens* and remain feminine: *Instruits* or *instruites par l'expérience les vieilles gens sont soupçonneux*, or *soupçonneuses. Orge* may be used in the feminine without exception: *Orge carrée, orge mondée, orge perlée.*

HYMNE may be considered common, whatever its signification: *Un bel hymne*, or *une belle hymne.*

PÂQUES may be used in the feminine to denote either a date or the religious festival.

Plural of Proper Names.

Proper names preceded by the plural article may always take the sign of the plural: *Les Corneilles, Les Gracques. Des Virgiles* (copies). *Des Virgiles* (editions). *Des Meissoniers* (pictures).

Plural of Foreign Nouns.

When nouns derived from other languages have become thoroughly nationalised, they may take the sign of the plural: *Des exéats, des déficits.*

Compound Nouns.

Compound nouns may be written without a hyphen: *Des chefs d'œuvre.*

Article.

According to existing practice, the article is used before certain Italian surnames: *Le Tasse, Le Corrège*, and sometimes wrongly before Christian names: (*Le*) *Dante*, (*Le*) *Guide.* Ignorance of this usage will not be considered important. In dictations the pupils should be informed whether the article forms a part of the names, as in Lafayette, or is separated from it, as in La Fontaine.

ARTICLE SUPPRESSED.—When two adjectives connected by *et* refer to the same noun, but in such a way as really to denote two different things, the article may be suppressed before the second adjective: *L'histoire ancienne et moderne*, or *l'histoire ancienne et la moderne.*

PARTITIVE ARTICLE.—*Du, de la, des*, may be used before an adjective qualifying a noun: *De* or *du bon pain, de bonne viande*, or *de la bonne viande, de* or *des bons fruits.*

ARTICLE BEFORE PLUS, MOINS, &c.—It is unnecessary to discuss the subtleties of the adverbial superlative in elementary teaching; either *le plus* or *les plus*, &c., may be used: *On a abattu les arbres le plus* (or *les plus*) *exposés à la tempête.*

Adjectives.

CONCORD OF THE ADJECTIVE.—In the expression *se faire fort de*, *fort* may always agree with the subject: *Se faire fort, forte, forts, fortes.*

ADJECTIVES USED WITH SEVERAL NOUNS.—If one adjective qualifies several nouns of different genders, it may always be made plural and masculine, whatever the gender of the last noun may be: *Appartements et chambres meublés.*

NU, DEMI, FEU, may agree with the nouns they precede: *Nus pieds, demie heure* (without hyphen), *feue la reine.*

COMPOUND ADJECTIVES may be written in one word (without hyphen), and follow the usual rule: *Nouveauné, nouveaunés, courtvêtu, courtvêtue*, &c.

Adjectives denoting colours remain invariable: *Des robes bleu clair.*

PAST PARTICIPLES INVARIABLE.—*Approuvé, attendu, ci-inclus, ci-joint, excepté, non compris, y compris, ôté, passé, supposé, vu*, may agree with their nouns in whatever position they stand: *Ci jointes les pièces demandées* (without hyphen). *Je vous envoie ci jointe copie de la pièce.*

FRANC DE PORT may similarly agree or remain unchanged: *Franche de port une lettre.*

AVOIR L'AIR.—The adjective may agree with the subject or with *air*, and no subtle distinction of sense is to be insisted on: *Elle a l'air doux* or *douce, spirituel* or *spirituelle.*

NUMERALS. VINGT, CENT.—An *s* may be added to these numerals when multiplied by another number, even though no number follows: *Quatre vingts dix hommes, quatre cents trente hommes.*

No hyphen is necessary: *Dix sept.*

IN DATES, *mille* may take the place of *mil*: *L'an mille huit cents quatre vingts dix.*

Pronouns.

CE.—*Ce ci* and *ce là* may each be written in one word; no distinction need be drawn between *Qu'est ce ci, qu'est ce là*, and *qu'est ceci, qu'est celà?* No hyphen need be employed.

MÊME may always agree with the noun or pronoun in the plural which it follows: no hyphen need be used: *Les dieux mêmes, nous mêmes.*

TOUT may always agree with the name of a town which it qualifies, without distinction of meaning: *Toute Rome.*

When a woman is represented as speaking, one may say indifferently, *Je suis toute à vous*, or *Je suis tout à vous*

When *tout* is used in the sense of *chaque*, *tout* and the accompanying noun may be of either number: *Des marchandises de toute(s) sorte(s).*

AUCUN, used with *ne*, may be employed in the plural as well as in the singular: *Ne faire aucun(s) projet(s).*

CHACUN placed after the verb and referring to a plural subject or complement, may be referred to by either *son*, &c., or *leurs*, etc.: *ils sont sortis chacun de son*, or *de leur côté; remettre des livres chacun à sa*, or *à leur place.*

Verbs.

COMPOUND VERBS may be written without apostrophe or hyphen: *Entrouvrir, entrecroiser.*

HYPHENS may be omitted between the (interrogative) verb and the pronoun subject: *Est il?*

DIFFERENCE BETWEEN THE REAL AND THE APPARENT SUBJECT.—Such constructions as *Sa maladie sont des vapeurs* should not be discussed in elementary teaching.

CONCORD OF THE VERB PRECEDED BY SEVERAL SUBJECTS.—If the subjects are not summed up by any indefinite word, such as *tout, rien, chacun*, the predicate may always be put into the plural: *Sa bonté, sa douceur le font admirer.*

CONCORD OF THE VERB PRECEDED BY SEVERAL SINGULAR SUBJECTS CONNECTED BY NI, COMME, AINSI QUE, &c.—The verb may always be put into the plural: *Ni la douceur ni la force n'y peuvent rien. La santé comme la fortune demandent à être menagées. Le général avec quelques officiers sont sortis du camp. Le chat ainsi que le tigre sont des carnivores.*

COLLECTIVES.—Whenever the collective is accompanied by

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a plural complement the verb may agree with the complement: *Un peu de connaissances suffisent.*

Plus d'un.—In the case of *plus d'un* the usual custom will be adhered to, and the construction of the verb in the singular be admitted: *Plus d'un de ces hommes était* or *étaient à plaindre.*

Un(e) de ceux (celles) qui.—The agreement of the verb in such cases depends on such delicate points that questions of the sort need not be introduced into elementary education, nor into examinations.

C'est, ce sont.—Before a plural noun or a plural third personal pronoun *c'est* may always be used: *C'est* or *ce sont des montagnes et des précipices.*

Sequence of Tenses.

The present subjunctive may always be used in a subordinate clause depending on a principal clause in which the verb is in the present conditional: *Il faudrait qu'il vienne.*

Participles.

Present participles and verbal adjectives.—Ultra-refinements in distinguishing these two parts of speech should be avoided; subtleties such as *Des sauvages vivent errant* or *errants dans les bois* ought not to be introduced into elementary teaching.

There is nothing to change in the usual rule for the inflection of past participles except when conjugated with *avoir* and followed by an infinitive, a present or past participle, in which case the participle may remain unchanged: *Les fruits que je me suis laissé(s) prendre. Les sauvages qu'on a trouvé(s) errants dans les bois.*

If the past participle is preceded by a collective, it may be made to agree with the collective or its complement: *La foule d'hommes que j'ai vue,* or *vus.*

Adverbs.

Ne may be omitted in subordinate clauses depending on *Empêcher, défendre, éviter que,* &c. *Défendre qu'on vienne.*

Craindre, désespérer, avoir peur, de peur que, &c. *De peur qu'il aille.*

Douter, contester, nier que, &c. *Je ne doute pas que la chose soit vraie.*

Il tient à peu, il ne tient pas à, il s'en faut que, &c. *Il ne tient pas à moi que cela se fasse.*

Comparatives and words indicating comparison, such as *autre, autrement que,* &c. *L'année a été meilleure qu'on l'espérait. Les résultats sont autres qu'on le croyait.*

Ne may also be omitted in a clause linked by *à moins que. A moins qu'on accorde le pardon.*

THE TEACHING OF HISTORY IN SCHOOLS.[1]

By W. M. Childs, M.A.
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"How much history does an average boy or girl carry away on leaving school at about 17? I speak subject to correction, but not without some warrant, when I answer:—A general knowledge of English history with probably some gaps; one or two 'periods' of English history rather more fully known; some Greek and Roman history studied alongside classical languages; perhaps a little modern foreign history, probably French. Perhaps one or two special books, such as Seeley's 'Expansion of England' or Bagehot's 'Physics and Politics,' may have been read during the last year. Whatever is remembered or assimilated of some such *corpus* as this is, perhaps, as much historical knowledge as an ordinary student carries away. Whether he gained it in such ways as were most likely to benefit his faculties is not now the point. The point is one of stock-in-trade on leaving school. I do not wish to belittle such a stock of knowledge; it is valuable. Conditions of time, of the curriculum, of teaching power, may often make it hopeless to attempt more. My criticism is not so much that something more should be attempted, but that something different should be attempted. The thing lacking in that stock-in-trade, the thing lacking in our history teaching as a whole, at school and the university, is a connected view. We agree that history is one, and quietly go on teaching it as several. How many of our pupils can swiftly and surely in their mind's eye follow the life of the English down the centuries, from its dim and rude origins to its far-reaching and subtle organisation to-day? How many can locate an historic fact, a characteristic or a set of past conditions, by a rapid reference to a scheme of world—or at least western—history which has become part of their mental possessions? Yet the value of seeing things in wholes is indisputable; no habit of mind is more useful in life. It is possibly the main distinction between the higher and the lower intelligence. And it is a reversal of natural order to specialise, as we so often attempt to do in youth, and leave to maturity the connected view. The young mind craves rapid movement; it hearkens to fewer wayside appeals; it delights in broad historical effects. The greater the stock of knowledge and experience, the more deliberate is the natural pace, the more searching is the natural procedure. Specialisation demands mature faculties and abundant time, and access to special books and lectures. These conditions can at most only partially exist in a school. I maintain, then, that the ideal of this stage is to impart connected views of national and of universal history. How is this to be done? It cannot be done at all if the class is to consume all its time and energy in getting up 'special periods' for this or that public examination. Let us assume a happier destiny.

"Universal history should precede national history, just as national history should precede local history. If we are to teach history as a whole, the whole must come before the part. In a lesson on Westminster Abbey, we do not begin with the west front or the Poet's Corner; we begin with the Abbey in the mass. It may seem audacious and almost unpatriotic to postpone English history to general history; but not a little English history should have been picked up in the story stage, and there is no reason why the two should not be taught simultaneously, if thought desirable. The point is that, rationally, general history precedes the other kind, as the idea of a house precedes the idea of a chamber. The history of a nation is but half understood, if we possess only a few patches of knowledge with regard to the history of mankind. 'In history,' says Mr. Bryce, 'there is nothing isolated.' And we are more likely to get the right perspective by proceeding from general history to national history than *vice versâ.*

"Universal history is an imposing title. All I wish to convey by it here is the general trend of events in the history of western civilisation, the rise and passing of the empires, the ascendancy of states, the characteristics of successive civilisations, the geographical shifting of the centres of political gravity, the periods and causes of decay and recovery, the landmarks of religious history, the great geographical and scientific discoveries and their results—what a course of lessons might be moulded out of the matter suggested by these heads! Nor is it true that such a course would be too difficult for the average teacher to prepare. True it is that here, as throughout the domain of Education, the teacher is everything: that some in the position of teachers cannot express what is in them, and others may have but little in them to express. The practice of some large schools

[1] Abridged from a Lecture delivered in January, 1901, at the Winter Meeting for Teachers at the College of Preceptors.

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in appointing a specially qualified teacher to direct the history teaching of the whole school needs no commendation. What is indispensable is that the teacher should have a true enthusiasm for his subject, a true sense of the dignity of man historically. Given this, he may attempt much by degrees. Though I know of no one book which compactly deals with all the course proposed, a few well-known books would constitute an ample magazine upon which to draw. The methods of attack might vary greatly and yet succeed. The real difficulty in preparing a course of lessons or lectures on general history is to detach the superfluous from the essential, to secure an outline genuine and lively, to present memorably the significance of great periods and passages without the cumbering detail. The exquisite sense of outline possessed by the Greeks is rarely ours. A bald summary of 'facts' is worse than useless.

"National history, as a title, explains itself; but local history, perhaps, calls for a word of comment. Though the histories of English places are by no means equal in execution and suitability for teaching purposes to our histories of England, yet during the century which has just closed the accessible stores of information have multiplied in all directions. The material is abundant, but how seldom is it utilised in our schools. Every town and district is rich in illustrations of the national tale, and it is part of the laxity of our history teaching that we pay so little heed to them. We do not heed the truism that the pupil who is wearied by the abstract and the general will often respond briskly to the concrete and the example. He may fail to visualise in his imagination the Roman Occupation, the Manorial System, the Personal Government of Charles I., the Epoch of Reform or the Industrial Revolution. These expressions may be little more to him than labels upon bales of dry goods, or—pleasing result of one method—he may command, with regard to each and all, an 'enclycopædic and momentary knowledge;' but once convince him that he lives encompassed by the witnesses of the past, that here in this very place the Roman planted his villa, the serf toiled for his lord, the monk was expelled to beggary, the townsfolk gathered to denounce ship-money, a self-elected corporation squandered the town revenues and the hand-workers smashed the new machinery —convince him that what he learns in the general can be proved in the homely particular, and the probability is he will begin to realise and understand as well as to remember. In teaching physical geography, we make use of familiar topographical features to illustrate principles of general application. The same wise method is applicable to history, and should be applied.

"From these general considerations as to subject-matter let us turn to discuss some practical points of procedure in teaching.

"(1) The ultimate aim is to establish connected views of general and national history, and the process of achieving it should invigorate almost every mental faculty of the pupil. Without necessarily discarding all the methods of the story stage, we now appeal in form to the memory and to the reason, as well as to the curiosity and to the imagination. We try to fix in the memory the governing facts; we discriminate between things historical and unhistorical; we elucidate cause and effect. While still chary of 'innutritious' constitutional topics, we discuss policy. Above all, the instruction at this stage is continuous and in the order of time.

"(2) Certain things must be learnt by heart. In bygone days this was the one method of teaching history, and still the irrational use of it vitiates much of our teaching. Our predecessors achieved, not without tears, a parrot-like familiarity with an historical catechism or a book of chronological doggerel. Such a system is easily condemned; but in so far as it gave a lasting knowledge of important dates it was sane. A person can no more think historically with precision, if his sense of time relations is faulty, than he can think geographically with precision if his sense of space relations is faulty. Nor am I able to see anything indecent in being able instantly to enumerate, thanks to a jingling rhyme, the foreign possessions of Henry of Anjou and the sources of their acquisition. We cannot, then, absolve our pupils from the toil of getting dates and the like by heart, but there are various ways of mitigating its severity. The dates of little things may take care of themselves. The amount of date-learning need bear but a small proportion to the history teaching as a whole.

"(3) Should the class use a text-book? I think they should; but particularly in the case of pupils from 12 to 15 or thereabouts the use of text-books involves dangers. First, even now and in English history, satisfactory text-books are few. All of us know some of superlative merit, but to judge by specimen copies which publishers send round, and by the reports of examiners, there must be a considerable demand for books of a cram type, in which the matter is compressed in pellets to be bolted whole without reflection. Students nurtured on stuff of this sort come to have a positive suspicion of a more liberal diet. Too often their mental digestive organs become permanently deranged. Secondly, with any but the best text-books rightly used the student may acquire the debilitating habit of learning pages of print by heart for reproduction at examinations. In the 'Report for 1900, Senior Candidates' (p. 66), issued by the Examiners of the Oxford Local Examinations, occurs this sentence:—'Teachers are warned that the use of unsuitable text-books is very injurious to the candidate's chances of success; for example, when, as is apparently too common, brief manuals, full of undigested facts, are given to the pupils to be read, or even learned by heart, with little or no oral teaching.'[1] Thirdly, there is the danger referred to in the last part of the passage I have quoted. Far better use no text-book at all than let it take the place of oral teaching. A text-book, of which the pupils prepare a portion beforehand, may tempt the teacher to think that no positive teaching or contribution is needed from him.

"(4) What should be the general character of the teaching? Should we lecture or should we employ a less continuous method, seeking more co-operation from the class? Probably all would agree that with boys and girls at school the latter should be the prevalent type of teaching. Nevertheless, especially with the higher forms, the occasional lecture has its value. In a lecture it is possible to give an unbroken impression, a complete picture, of a whole. Connected argument can be employed. It may possess a greater endowment of historical atmosphere. If notes are taken, the practice is in itself valuable mental exercise If notes are not taken—a plan occasionally expedient—the practice of giving continuous attention (assuming the lecturer can command it) is also valuable. Certain recurrent kinds of subject lend themselves peculiarly to presentation in lectures. Every course of instruction in history should, I think, begin with a lecture dealing lightly with the whole period to be studied. The character of a great controversy, as that between Charles I. and the Parliament, may best be explained in a lecture. So also may a campaign. 'In far too many instances,' say the Oxford Examiners (p. 70), 'military operations were disposed of with a bare enumeration of engagements.' Is not this because a campaign—and the study of a great campaign is a discipline of the first value—cannot be understood without more explanatory detail than text-books and class instruction usually provide?

"There is, of course, one special danger to which all teaching which involves note-taking is liable. It is that the notes may tell the student what he ought to find out or reason out for him-

[1] These remarks apply to other subjects besides history

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self, and that he will cram those notes by the page. 'Teachers are warned,' say the Oxford Examiners, 'against giving their pupils answers to learn by heart.' 'Some candidates had evidently learned certain parts of the history off by heart. Such a practice is extremely disastrous.' It is odd that any teachers outside China should need such a warning; but that it is needed is certain. There appear to be places of education where sheets, prepared by the teacher, containing all the facts and arguments, causes and results, neatly set forth in answer to a question likely to be set, are handed round the class, nominally to form the basis of a lesson, in reality to be ruthlessly rammed into the memory. When this system succeeds, it produces a dead level of mechanical orthodoxy; when it does not succeed, the pupils in examination, frantically striving to recall what they have learned but not understood, produce answers which, for irrelevant muddle, suggest insanity. In any case, such a system murders thought as with a bludgeon. It is often a vain effort to try to get students, who have been trained under such influences, to think for themselves at all; they are as helpless as a near-sighted scout in an age before field-glasses. It is impossible for the teacher to be too vigilant against allowing himself to tell his class what they ought to tell him, and against allowing them to 'get up' unintelligently notes which ought to be understood and assimilated. We have to be on our guard not only against the slack student, but against the student of perverted industry.

"(5) Of the aids and devices for illustrating a lesson and rendering it attractive, the most obviously useful is the map. Political history without maps is like music without sound. Fortunately there are atlases, both for general history and for English history, which are both trustworthy and cheap. For most purposes, especially where detail is required (as in a plan of campaign), the atlas open upon each desk, or the specially prepared cyclostyled map, plan or diagram, for each student, is preferable to the wall-map, which is so often lacking in something essential and always trying to the eyes. The advantage of a blackboard map is that it may be built up in the presence of the class. In any case, pupils should learn quickly to transfer the essential features of maps into their note-books. No encouragement should be given to any qualities more elaborate than clearness and accuracy.

"Pictorial illustrations when good are always welcome. Pupils should always have access to a history with good illustrations, *e.g.*, J. R. Green's. A teacher who can draw will have many chances to exercise his talent; a teacher who cannot draw may yet add to the gaiety and understanding of the class. It is a real help, and by no means dependent on artistic skill, to be able to convey to beginners, through rough diagrams and sketches, such ideas as Feudalism, Centralisation and Decentralisation, how the Tudor despotism came about, &c. An occasional lantern lecture on an attractive subject may be a stimulating and appetising 'extra;' but lantern lectures, though useful auxiliaries, are not for our purposes strict 'business.' The darkness, the fleeting succession of pictures, the broken thread of exposition, are drawbacks which only the most skilful can overcome.

"Visits to historical buildings, museums, battlefields and places, are useful when the thing visited is pertinent to the period studied, and when the pupils are not bored with too much explanation. It is not the end of our teaching to produce precocious antiquarians. I have seen studies by quite young students of architectural details, armour, or such objects as the Coronation Chair, of an almost senile elaborateness. A drawing, plan, or written account of the thing visited, are good historical exercises for boys and girls only in so far as they are executed with simplicity and brevity.

"The question of written exercises is one which any teacher who has ever been confronted by a pile of fifty will approach with a sigh. Yet the written exercise is an integral part of a sound system of teaching. The *viva voce* has its special value; there is also a kind of rapid *viva voce* paper examination which I have often found useful for revision purposes; but the essay is indispensable. 'Writing maketh an exact man.' It is, of course, easy to set a question to answer which it is merely necessary to reproduce what has been read or taught. Nowhere is the true teacher tested more really than here. To set a question which cannot be answered out of a book, and yet is not of repellent difficulty, which stimulates because it is interesting, which is appropriate to the stage of ability, calls for no little tact and thought. Every effort should be made to get pupils to think for themselves, to weigh arguments, to follow out cause and effect, to illustrate the period under study by analogies and parallels from another already mastered.

"(6) No effort should be spared to make the history taught to boys and girls interesting. 'The teacher's function,' says Mr. A. L. Smith, 'is to make dry bones live, and not to hold them up for study in their most desiccated and osseous condition.' And if, further, a teacher has a vestige of humour and a morsel of tact, he may light up many a seemingly dull passage with the best effect. The history taught to boys and girls is, or should be, strictly humane. Now a thing is less than humane the moment humour dies out of it."

PENSIONS FOR TEACHERS IN SECONDARY SCHOOLS.[1]

The statement that teachers in Germany, Austria and Switzerland have long been entitled to a pension after a certain number of years of service, specified by law, is both correct and incorrect. It is true that after a certain term of faithful service they could resign and continue to draw a fraction of their salary, *i.e.*, live on a pension. But this so-called pension was, to a large extent, money which the teachers had paid into the pension funds during their term of service. This was the rule until recently, but now State and communal governments have come forward to increase these funds by annual grants. This appreciation of teachers' past services has, during the last twenty years, increased to such an extent in several States of central Europe that contributions to the pension funds on the part of the teachers have ceased, and the State and the communities now bear the entire burden. But that the State and the communities pay the teachers' pensions exclusively is by no means the general rule, though the trend may be that way in all continental European States. With few exceptions (such as Würtemberg), the provisions concerning pensions are the same for men and women.

Prussia.—A general regulation governing the conditions of pensions for teachers of secondary educational institutions was issued in the year 1846. The pension fund was partly raised by contributions from those benefited. Teachers paid their first month's salary after permanent appointment, and in case of promotion one-twelfth of their annual increase, consequently a month's salary, together with the subsequent annual assessment of 1 per cent. to 1½ per cent. of their salary. These conditions were set aside by the pension law of March 27th, 1872, now in force and modified by the amendments of March 31st, 1882, and April 30th, 1884. The present regulation is, in all essential points, the same as for teachers of elementary schools, according to the laws of July 6th, 1885, and July 23rd, 1893. The last-named

[1] Abridged from the "Report of the Commissioner of Education for the year 1898-99," vol. i. Washington: Government Printing Office, 1900

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law includes all teachers and officers of gymnasia (classical high schools), Realschulen (modern high schools), normal schools, institutions for deaf-mutes and the blind, as well as technical, industrial and preparatory schools. Universities and other higher seats of learning are excluded. It is worthy of note that teachers of secondary schools maintained by the community and not under State control receive the full benefit of the law.

BAVARIA.—After a three years' provisional employment, pensions during the first ten years of service amount to seven-tenths, during the second to eight-tenths and during the third to nine-tenths of the fixed salary. At the end of the seventieth year of age, which equally with the fortieth year of service justifies the highest pension claim, the full salary is received. Since the year 1894 assistants come under the pension regulations for non-active officers, such as supervisors, clerks, &c.

WÜRTEMBERG.—At the beginning of the tenth year of service a pension amounts to 40 per cent. of the salary, inclusive of age gratuities, but exclusive of allowances for residence. Until the fortieth year of service a pension increases annually by 1¾ per cent. as high as 92½ per cent. in cases where the salary is not higher than £120. The rate of increase is 1½ per cent. as high as 85 per cent. with salaries over £120. No pension can exceed £300. A teacher who becomes incapacitated at the end of his ninth year of service may claim a life pension from the State treasury. If disabled before that time, he is entitled to a relief allowance, which is paid only once. The State can order the pensioning of a teacher without his application or consent, if he has attained his sixty-fifth year of age and is hindered by age in the exercise of his duties, or has become disabled through physical infirmity or mental debility, or when sickness incapacitates him for longer than a year. On the other hand, no teacher can claim honourable discharge for life. The pension and widow fund claims 25 per cent. of the first year's salary and 2 per cent. initiation fee at the first permanent appointment, and 25 per cent. of the allowance, whenever a salary is increased, together with 2 per cent. of the salary received, as regular contribution.

SAXONY.—In consequence of the law of May 26th, 1868, a general pension fund, to which teachers and the State contribute, has been established. The law of April 9th, 1872, provides for pensions at the close of the tenth year of service. After forty-five years of service the highest pension of 80 per cent. of the salary last received is realised. The law of March 25th, 1892, somewhat improved conditions. The first pension, it is true, was, in consequence, reduced from 33 to 30 per cent., but the highest pension (80 per cent.) is now received after forty years of service. The term of service is reckoned from the close of the twenty-fifth year of age, without regard to the fact whether the position held at that time of life was a permanent one or only that of a substitute. After forty years of service, or when 65 years old, a teacher may apply for honourable discharge, which he may also receive without his application or consent. Teachers' contributions towards pension funds were discontinued in 1899.

BADEN.—At the close of ten years of service a pension amounts to 30 per cent. of the income, and increases each year by 1½ per cent. until the maximum of 75 per cent. is realised at the end of forty years of service. As is the case with all other officers, honourable discharge may be given at the close of the sixty-fifth year of age, or sooner in case of disability. A teacher cannot claim a pension before he has completed his tenth year of service.

HESSIA.—Pensions may be received at the close of the fifth year of service; they then amount to 40 per cent. of the salary. From the sixth to the tenth year they increase annually by 2 per cent; from the eleventh to the thirtieth year by 1½ per cent., and from the thirty-first to the fortieth year by 1 per cent.

MECKLENBURG.—There is no definite pension law in either Mecklenburg. In Schwerin, however, in accordance with fixed principles of administration, teachers of public schools, like all officers of the State, may claim a pension after twenty years of service, when it amounts to 50 per cent. of the salary, increasing by 1 to 1½ per cent., until with the fiftieth year of service 90 per cent. of the salary is received.

AUSTRIA.—A pension may be claimed after eight years of service. With teachers three years are reckoned as four; consequently they receive the full salary as a pension after thirty years of service instead of forty, as is the case with other State officers. At the age of 65 teachers of secondary schools may retire on a pension amounting to the salary last received and additional personal allowances; after the seventieth year of age their honourable discharge is compulsory by law.

HUNGARY.—Teachers of secondary educational State institutions may claim a pension of 40 per cent. of their salary after ten years of service. From that time on the pension increases by 3 per cent. annually, so that after thirty years of service the full salary is received, but without residence indemnification. Every teacher, however, is obliged to make one payment of a third of the excess of his salary over £24, as well as one-third of the amount of increase for every advance in salary. Since 1894 teachers of institutions not under State control are entitled to the same pensions.

SWITZERLAND.—The conditions governing pensions in the different cantons are so manifold that it is impossible to state them briefly. It may be well to mention, though, that in some cantons—Lucerne, for instance—pensions are not paid to teachers at all. Even in the advanced cantons the conditions are not favourable, and the people of the Swiss Republic are generally slow in acknowledging pension claims on the part of civil officers.

DENMARK.—Here each teacher's pension claim is decided by the Minister of Education, in accordance with the general pension law for officers. One-tenth of the salary may be received as a pension after two years of service. The maximum of two-thirds is obtained at the seventieth year of age.

NORWAY.—Pensions for teachers are not regulated by law, but are specially granted in each case by the Storthing or Parliament.

SWEDEN.—A teacher receives a pension after he is 70 years of age, and has served thirty years, or when he is 65 years old, and has served forty years and a physician confirms the necessity of his being pensioned on account of ill health. For teachers of upper grades the pension amounts to £180: for assistants and teachers of lower grades, as well as preparatory grades, £160. If a regular teacher becomes disabled before his sixty-fifth year of age, he is required to pay for a substitute out of the salary, which he continues to draw, until he is old enough to receive his pension.

THE NETHERLANDS.—Teachers of advanced burgher schools are entitled to a pension after ten years of service. The amount drawn increases annually by one-fortieth of the regular salary, until the highest amount of two-thirds is received. Teachers of secondary State schools must, within five years of their appointment, pay a full year's salary into the pension treasury. Teachers of communal schools, though receiving the same amount of pension, are exempted from this obligation. The pension law that applies to civil officers applies also to teachers of gymnasia, which, in the Netherlands, are communal institutions. For every year of service a pension amounts to one-sixtieth of the average income of the last sixty months of service.

BELGIUM.—A pension for teachers of secondary schools is reckoned from the average income of the last five years of service; for every year additional one fifty-fifth of this amount

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is received. A pension never amounts to more than two-thirds of the income, or more than £200. Upon application, at the age of 55, and after thirty years of service, a teacher may retire and a pension is granted him. Teachers who become disabled before completing their tenth year of service are provided for as in Prussia.

France.—Teachers of lycées are entitled to honourable discharge at the close of thirty years of service, but only after they have reached 60 years of age. The pension amounts to two-thirds of the average salary during the last five years of their service. With the first payment of salary, and with every increase, one-twelfth is deducted for the benefit of the pension fund. Besides, 10 per cent. of the salary is retained and turned into this fund during the whole time of service.

Spain.—Regular teachers of secondary schools receive two-fifths of their highest salary for two years after twenty, three-fifths after twenty-five, and four-fifths after thirty-five years of service.

Portugal.—Disability after ten years entitles a teacher to a pension of one-third, after twenty years to one of two-thirds of the salary last received. After twenty-five years of service honourable discharge with full salary can be claimed. When a teacher stays in office beyond twenty-five years his salary is increased by one-third; after a further term of service of ten years his pension amounts to the increased salary.

Italy.—Teachers of secondary schools may retire from service for a period of months or years on account of ill health and still draw from one-half to three-fourths of their salary, according to the number of years they have been in service.

Greece.—Teachers are entitled to two-fifths of their salaries after nineteen years and seven months of service. The pension increases annually by one-fiftieth. Seven and one-half per cent. of the monthly salary of teachers is deducted for pensions.

Russia.—The pensions for teachers of secondary schools are not uniform. In most parts of the Empire a principal draws £80, an inspector £70, teachers £60, and special teachers of German and French £25 pension after twenty-five years of service. In St. Petersburg, Moscow, Riga, Reval, Warsaw, Kiev, Kharkov, and in Caucasus pensions are higher. In the first four cities a principal draws £120, an inspector £90, and a teacher £71. Whoever is retained in service after twenty-five years draws a pension and a salary. The pension increases with every five years by one-fifth.

CURRENT GEOGRAPHICAL TOPICS.

By A. J. Herbertson, Ph.D., F.R.G.S.

The Physical Features of the Balkan Peninsula.

The unchanging east, whether near or far, is the source of most complicated and pressing problems. These are most acute on its margins, where it comes into contact with the changing west. While our attention is at present concentrated on the far east, events are moving in the near east which may prelude great upheavals.

The chief guarantee of peace is the multifariousness of the interests of the diverse peoples of the peninsula and the conflicting rivalries of the Great Powers surrounding or interested in it. Geographical considerations play a great part in determining both sets of factors. In the present and succeeding articles it is proposed to analyse the physical and social geography of the peninsula.

The Balkan peninsula is not cut off from the core of Europe by a marked physical barrier as the Iberian Peninsula by the Pyrenees. The conventional northern boundary is the line of the Kulpa-Save-Danube, and if we add the Wallachian plain it coincides roughly with latitude 45° N. The area is about 175,000 square miles, excluding Wallachia and all islands, or including the islands one and a-half times that of the British Isles. Over 800 miles from east to west in the north, the peninsula is less than 150 miles wide between the Ægean and Ionian Seas. It is 550 miles from the Danube to the south of Greece, but only 200 miles from that river to the Ægean. The western part is therefore much longer from north to south than the eastern.

To understand the structure of the Balkan peninsula we must think of (1) an ancient highland which forms the Servian Highlands in the north, and the Macedonian and Thracian Highlands in the south. Round these old highlands the crustal movements which gave rise to the tertiary mountains of Europe have piled up (2) the Balkan mountains on the north bending round from the Klisura and Iron Gates, where the Danube separates them from the Transylvanian Alps, to take an easterly trend through most of their course of 370 miles to Cape Ermine; (3) the Dinaric-Albanian-Grecian mountains stretching from the head of the Adriatic to the extreme south of Greece, and running on the whole from north-west to south-east in the north, and almost from north to south in the south. Then we have to take into account the still later fracturing which formed the Mediterranean Sea, broke the connection between the folded mountains of Greece and those of Asia Minor, and cut the southern part of these regions into many peninsulas and islands.

The Dinaric-Albanian-Grecian chain forms the western boundary of the Balkan peninsula and stretches for 850 miles from the head of the Adriatic to the extreme south of Greece. It is remarkably uniform in structure, being composed of parallel ranges of folded limestone mountains in the north, but with some fertile sandstones and crystalline rocks in the south. Hardly a river pierces it to the Adriatic. The most important are the Narenta and Drin, which flow in deep longitudinal valleys, and then pass through transverse gorges between the mountain ranges to the coast.

Many rivers, however, disappear beneath the porous limestone, and may reappear again as great streams issuing from a cavern. The surface is pitted with hollows, in the centre of which the water sinks underground. These are called sink- or swallow-holes. Little alluvial land or humus is found in this bare, infertile, and thinly-peopled region. The northern limestone plateau of the Karst gives its name to this type of landscape.

The coast is fringed with long narrow islands, the axes of which are parallel to the ranges of the mountains, and the bays usually have the appearance of submerged transverse and longitudinal valleys. This Dalmatian coast gives its name to the type of coast, the strand of which is parallel to a folded mountain range, part of which has been submerged. The same range in the south forms a rias coast, where the ridges are peninsulas, and the valleys and gulfs run at right angles to the general trend of the coast.

The Balkans (Haemus) are about 12 miles wide in the west, and 30 miles in the east. They have a wide limestone foreland in the north, which gradually slopes to the Danube, but they fall steeply to the Maritsa and Tunja valleys in the south. They are not very high (Jumrukchal, 7,800 feet), and are crossed by a number of passes, of which the Shipka is the best known (4,375 feet.)

The Danube in the north, and the Tunja and Maritsa (Hebrus) in the south of the Balkans, all flow eastward. The

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Tunja turns southwards and joins the Maritsa, and the united streams flow to the Ægean on the east of the Thracian or Rhodope Highlands.

The Central Highlands of the Balkan peninsula are mainly composed of crystalline and ancient eruptive rocks, which form great mountain masses separated by erosion valleys sometimes cut along lines of fault. The valleys have a succession of narrowings which separate wider alluvial plains, the fertile and more peopled regions of the peninsula, *e.g.*, those of Sofia, Prisren, Skoplye (Uskub), Bitolia (Monastir), Thessaly, and Arcadia.

The Servian Highlands in the north are drained by the Bosna and Drina to the Save and the Morava to the Danube. The schistose Shar Dagh (Lyuboirn 8,250 feet) and Osigova and the granitic Rila and Mussalah masses form the highest parts of the peninsula north of Mount Olympus (9,800 feet), and lie in 42° N. The first and second are the northern heights of the schistose Macedonian Highlands, drained by the Vardar and Vistritsa to the Gulf of Salonika and separated by the Struma from the trachylic and gneissic Thracian Highlands (Perim and Despoto Dagh, or Rhodope Mountains), of which the Rila and Mussallah are the northern masses.

The peninsula is thus shut off from the west, open to the north in the north-west, and to the south and east in the south-east. From the Morava valley one route traverses a pass which leads to the Vardar in the south, and another turns eastward up the Nishava, crosses to the basin of Sofia in the upper Isker, the only river which cuts through the Balkans, and thence by Trajan's Gate to the Maritsa valley, the Black, Marmora and Ægean Seas. In the Grecian part of the peninsula the continuity of the western barrier mountains is broken by the great rift of the Gulf of Corinth, which cuts off the Morea from the mainland by the narrow isthmus of Corinth, on the east of which is the Gulf of Ægina. The main structure lines of the Balkan peninsula, therefore, shut it off from the west, throw it open to the east, and permit communication towards the north.

These structure lines also determine the great climatic divisions. The Adriatic coast is mild, and receives abundant rains; the rest of the peninsula has a climate with greater extremes of temperature and a much lower rainfall, so the western mountains form a sharp barrier between the western and eastern climatic regions. The south is remarkable for its long summer droughts, while in the north the summer rains occur.

Much of the western coast is covered with scrub, but where cultivated it yields Mediterranean fruits of all kinds. The valleys of the south tend to be poor steppe lands, but where irrigated yield rich crops, more particularly of Mediterranean fruits and roses. The northern mountains with summer rains are covered with forests of oak, beech, and other trees common to Central Europe.

In climate and products the Adriatic coast resembles peninsular Italy, the southern valleys of the peninsula and Greece northern Africa, the northern mountains those of Central Germany.

UNIVERSITY EDUCATION IN IRELAND.

AN event of the highest importance to Irish secondary education took place last month, the issuing of a Royal Commission "to inquire into the working of the Royal University as an examining and teaching body, in relation to the educational needs of the country at large, and to report as to the means by which university education in Ireland might receive a greater extension, and be more efficiently conducted than it is at present."

The issuing of the Commission is the result of the unanimous request of the Senate of the University, addressed to the Lord-Lieutenant, that body giving as a reason for the request that "the relations of the university with its own colleges and students, and with other colleges and students, are unsatisfactory." Lord Cadogan received a deputation from the Senate on the 9th of March, and announced that the Commission would be issued, and that it would contain among its members men eminent in education from other countries than Ireland.

It is believed that the Commission will form a preliminary inquiry leading to some settlement of the Roman Catholic claims in higher education, and that it is possible that the Royal University will be altered into a teaching university with affiliated endowed colleges, either wholly Catholic — an Ulster university or a college connected with Dublin University being then founded—or partly Protestant and partly Catholic. This would have an important effect on the secondary schools throughout the country. At present Fellows of the Royal University teach in the three secular and endowed Queen's Colleges of Belfast, Cork and Galway, and in the otherwise unendowed Catholic University College, Stephen's Green, and many students attend these institutions; but students prepared in any college, or by private study, can also go through the university, and hence most of the large secondary schools have such senior university students, many of whom are prepared in these schools up to the standard of the B.A.

In the almost certain event of the university being made a teaching university, all its students would have to enter one of the affiliated colleges, and such university students would be removed from the intermediate schools, leaving the schools freer to devote themselves to purely school education.

This is especially the case with girls' schools. The women students of the Royal University of Ireland are almost wholly prepared in unendowed women's colleges, which are also schools in which the youngest children are taught. As an English educationist visiting Ireland said recently, "You have no women's colleges in Ireland; only schools with university tops." Some of such colleges, represented by the Central Association of Irish Schoolmistresses, the Ulster Schoolmistresses' Association, and two of the leading Roman Catholic colleges, have addressed a memorial to the Lord-Lieutenant, asking that special representatives of the women students shall be appointed on the Commission, as such changes would so deeply affect women's education. The Royal is the only university in Ireland open to women.

ITEMS OF INTEREST.

GENERAL.

THE collection of test papers for the higher and lower grades of the Scotch Leaving Certificate Examinations of June, 1901 (pp. 151-7), are specially intended for the use of teachers in the schools of Scotland, but the questions should also prove useful as exercises for the higher forms of other schools. We have arranged to publish in the May number a set of revision tests for the second and third-class examinations of the College of Preceptors, to be held as usual this summer; revision papers for the next London University Matriculation examination will also appear. In view of the letters which reach us from time to time, this opportunity may be taken of saying that packets of reprints of many of the papers published last year can still be obtained.

IN replying to Lord Reay, who asked certain questions arising out of the "Cockerton" case, the Duke of Devonshire said, in the House of Lords at the end of February, that the state of the law described in the judgment in the case referred to renders it more urgent than ever that local authorities for secondary education should be established without further delay. The proposals introduced last year by the Government will, the

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Duke hopes, be introduced again in the present Session, when Parliament will face the difficulty of the demarcation of the line between the functions and powers of School Boards and those of the new authorities for secondary education. It is a little difficult to be optimistic as to the probabilities of success in this direction. Until each district is provided with one local authority, on which every grade of education is duly represented, there is little hope of a lasting and satisfactory scheme of delimitation. How long will it be before the conception of education as an organised whole, in which elementary, higher elementary, secondary and technical education, each takes its proper place, will become common property?

Mr. Yoxall's motion in the House of Commons, on March 5th, to reduce the vote on account of Civil Service and Revenue Departments, gave rise to a debate of the highest educational importance. In a thoughtful speech Mr. Yoxall maintained that the conduct of the administration of the Board of Education indicates something like a deliberate policy to check higher elementary education and to nullify the efforts of School Boards. Sir John Gorst, in replying, distinguished two kinds of higher-grade schools, those which teach each of the subjects of the Elementary Day School Code, the legality of which has never been questioned; and those which consist of two departments, a lower division which is an elementary school, and an upper division which is an organised School of Science, examined only by the South Kensington inspectors. There is, Sir John said, no illegality in the establishment of these Schools of Science; the illegality consists in the application to them of the school rate for building or maintenance. He read numerous extracts from letters sent by the Education Department to various School Boards, some as long ago as 1884, to show that this illegality has been consistently recognised at Whitehall. School Boards will have to return to the condition of things which obtained in the early days of these schools. Either they must pay fees and make the schools self-supporting, or come to terms with the local authority (that is, the County Council) which has power to rate for the purpose of technical instruction.

The discussion which ensued bristled with points of interest. It was contributed to by Mr. Bryce, Mr. Gray, Dr. Macnamara, Sir W. Hart Dyke, and many others. On the necessity for immediate legislation there was complete unanimity, and we are loth to believe that the Government will lose this opportunity of doing something to clear up the present state of educational muddle. The general desire for one local authority to deal with every kind of education has a particular significance. It is clearly beginning to be recognised that loss by overlapping, by friction, by difference of aim, by local jealousy, is inevitable where several educational governing bodies exist in a district side by side. Half the present antagonism between the local authorities responsible for secondary and primary education respectively is the outcome of ignorance of one another's work. Free intercourse the one with the other, and an honest desire to understand each other's aims, would do more than anything else to improve and complete the provisions made for education. We heartily agree with Sir W. Hart Dyke it is high time that, after debate upon debate in the House of Commons, measures of the kind, which have been shown with almost sickening iteration to be necessary, should be produced in a practical shape.

From a reply of Sir John Gorst to a question of Mr. Pym, in the House of Commons, we learn that seven secondary schools have been already examined by the Board of Education; eighteen other inspections have been arranged for, and thirty-eight applications are still under the consideration of the Board.

As a precautionary measure the Nottingham School Board have decided, should it prove necessary, to oppose the Education Bill now being promoted by the Corporation of Nottingham, in respect to its education clauses, before the Committees of both Houses of Parliament and at all other stages. We have already explained (p. 69) that the Bill proposes to dissolve the existing School Board, and to transfer their property and liabilities to the City Council.

The Technical Instruction Committee of the Middlesex County Council have given instructions for the district councils to be asked to provide funds under the Technical Education Act, 1889, for the purpose of establishing secondary and technical schools, in which event the county committee will be prepared to assist such efforts, due regard being had to existing institutions. The committee are already assisting all the endowed schools in the county by substantial grants, and recognise the serious want of schools giving a good secondary education, paying special attention to modern languages, including English.

The last report of the Technical Education Committee of the Derbyshire County Council gives some interesting particulars of what has been done for secondary schools throughout the county. Further progress has been made with the new buildings at the Chesterfield and Staveley Grammar Schools. The Chesterfield scheme affords a good example of the co-operation of different educational authorities, the new buildings having been erected by the joint action of the County Council, the Chesterfield Town Council and the Governors of the schools. The total cost of the scheme, including structural alterations, additions and furnishing, will be about £6,000. Owing to unfortunate delays, the progress in building the new laboratories at the Staveley School has not been so rapid as was anticipated. The school has, however, commenced work.

At the annual meeting of the Association of Headmasters of Higher-Grade and Organised Schools of Science held on March 1st, it was unanimously agreed: "That this meeting considers that the Schools of Science connected with Higher-grade Schools should be allowed to continue as at present, since they were in most cases established on the advice and under the pressure of the Education Department, and have received the approbation and support of successive vice-presidents." Another resolution was adopted declaring that the following amendments of the Higher Elementary Minute are imperatively necessary:—(1) An increase in the number of successive yearly courses provided after Standard V. and the raising of the age limit to bring the Minute into agreement with the Joint Memorandum prepared in conjunction with the Headmasters' Association; (2) the removal of the restrictions on admissions to higher elementary schools; and (3) the removal of the requirement that every pupil admitted to a higher elementary school should be made to begin with the lowest course.

Speaking recently to the Birmingham branch of the Institution of Electrical Engineers, Dr. Lodge, Principal of Birmingham University, referred to the idea common with many people that mathematics were useless to practical men. The objection arises, Dr. Lodge thinks, from a suspicion that mathematics are often so badly taught that by the time a man has become familiar with them he is a little unfitted for anything else. The training of a pure mathematician is one thing, the training of engineers and physicists is another. In the course of other remarks, Dr. Lodge said: "The reform of mathematical teaching has been often taken in hand, but the old mathematical Tory perseveringly conducts the patient English youth by roundabout paths and over that asinine bridge and other antiquities the continued school use of which is a monument of modern education folly. Euclid's work as a

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system of geometrical philosophy is admirable, but, like some other good things, it is out of date, and for elementary and popular purposes should cease to be. We are too busy and there is too much to learn nowadays to leave time for us to cross every river by ascending to its source and walking down the other side. The bridges are there, and sooner or later even schoolboys will be permitted to make use of them and enjoy the country on the other side without spending all their days in the toilsome and deterrent mode of getting there over the route approved of by the ancients."

MR. J. H. BEECROFT, of the County School, Wrexham, and a member of the committee of the public free library, has recently made an inquiry into the private reading of the children from the elementary schools of that town. He finds that "Robinson Crusoe" and the Bible are the most popular books, and that the "Pilgrim's Progress" is easily third. About half the children who answered the questions set by Mr. Beecroft have no favourite book. The inquiry also included the hobbies of children and their general views as to reading.

AN influential committee, including the Duke of Devonshire, the Duke of Argyll, the Earl of Derby, and Earl Spencer, have issued an appeal with the object of raising £150,000 in celebration of the jubilee of Owens College, Manchester. Fifty thousand pounds are needed to discharge debts that have been contracted, and £100,000 for additional endowment. Among the objects the promoters have in view are the extinction of the debt of £22,000 on the buildings of the medical school; special endowments for existing chairs, including French, chemistry, education, anatomy, and philosophy; the establishment of new chairs of English literature, Hebrew, and architecture; the establishment of an institution for bacteriological investigation and for the study of hygiene, and of research fellowships; and the creation of a pension fund for members of the teaching staff.

THE valuable assistance which the Countess of Warwick has given to agricultural education in this country is well known. The most recent instance of her interest and generosity is the educational flower show to be held at the Crystal Palace on August 16th and 17th, in connection with the National Co-operative Festival. Lady Warwick offers a handsome trophy, to be competed for by students for the honour of the school or class with which they are connected. We notice from the schedule of prizes that a challenge shield, together with ten guineas, is offered for the best display of garden produce exhibited by any educational establishment. Numerous prizes are also to be competed for by school gardens in connection with all kinds of schools. Full particulars of the competition will be found in the March issue of the *Woman's Agricultural Times*.

AT a combined meeting of the College of Preceptors and the Metropolitan Branch of the Assistant-Masters' Association, held on March 6th, Mr. Fabian Ware read a paper on "Some Foreign Educational Ideals," in which he compared and contrasted French, German and American systems of national education. Mr. M. E. Sadler presided, and at the conclusion of the paper opened a discussion with a vigorous and humorous defence of English methods. The education of a country, said Mr. Sadler, is an efflorescence of the national life. It is essentially an intellectual and spiritual atmosphere, influenced by a complex of disturbing factors, such as newspapers, sermons, the attitude of the man in the street, and a thousand-and-one other causes. To rashly borrow foreign systems of education would be unwise. The present is a time of fruitful experiment in this country; and since no school of educational thought possesses a monopoly of the truth, we must for the present be content to allow the numerous plans which are being tried to grow together. It may be possible later to distinguish the wheat from the tares.

THE School Board for London recently sent a letter to the Board of Education dealing with the questions raised by the Cockerton judgment. The School Board suggested that the Code and the Higher Elementary Education Minute should be so amended as to secure—(1) That grants be paid to scholars in attendance up to the age of 16; (2) that higher elementary schools be recognised with varying curricula suited to the needs of the district, and with such freedom as is conceded by the Scotch Code; (3) that in schools where the Board of Education are not prepared to concede the more liberal grants of the Higher Elementary Minute, scholars who stay on and are suitably instructed beyond the standards be paid the same block grant as was paid to them in the standards, also up to the maximum age of 16, or at least of 15. A reply from South Kensington states that: "Unless the judgment is reversed upon appeal, the Board of Education will be unable to continue to pay grants to schools of science and art or to science and art classes which are maintained by an illegal application of the School Fund by School Boards." The letter goes on to say: "That schools of science can be converted into higher elementary schools, under the Minute of April 6th, 1900, and would then be eligible to receive the grants from the Board of Education specified in that Minute. The interests of all scholars at present in such schools would, in the arrangement for such conversion, be carefuily considered."

THOSE teacheis and others who have been successful in securing berths on the *Argonaut* for the Easter cruise to the Islands of Greece are to be congratulated on their good fortune. The tour has been organised by a schoolmaster, in the interests primarily of schools. The itinerary has been drawn up rather to include the less accessible places of interest in Greek waters than to enable passengers to visit Athens. But, for the benefit of those who have not been to Athens before, a compromise has been made to meet the wishes of this section of the party. We learn that excursions are to be made to Ithaca, Itea (for Delphi), Nauplia (for Tiryns, Argos, and Mykenæ), Ægina, Piræus (for Athens), Delos, Megalo Kastron (for Knossos), Pylos, Katakolo (for Olympia) and Syracuse. Some members of the party who have exceptional knowledge of Greece and its archæology will give some account of each place to be visited before the vessel arrives, but formal lectures are to be avoided. The management of the cruise is in the hands of Dr. Lunn and Mr. Connop Perowne, which is guarantee enough that the comfort and wishes of those taking part in the trip will be considered at every stage. The party leaves London on April 3rd.

THE Marquis of Salisbury attended the annual banquet of the Association of Chambers of Commerce on March 13th, and in replying to the toast of "His Majesty's Ministers," gave an important speech on commercial education. Referring to the value of modern languages, Lord Salisbury said that if he were capable of prescribing the course that ought to be pursued, if he were not afraid of urging counsels of perfection, he would say that all those who have to make their living by commerce in any of its stages, from the highest to the lowest, ought to know French and German, and possibly Spanish, before they think of Latin and Greek. Those of us who know the capabilities of the ordinary boy will come to the conclusion that there is little hope of their ever becoming acquainted with either of the classical languages if they have first to master two or three modern tongues. It certainly begins to seem that very soon Latin and Greek will be luxuries reserved for the professional and leisured classes.

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The Teachers' Guild have again arranged Modern Languages Holiday Courses for the summer vacation. As in previous years, French courses will be held at Tours, Liseux and Elbeuf. And this year a Spanish course, arranged in co-operation with the Technical Instruction Committee of the Staffordshire County Council, has been organised, and will be held at Avila, a small but very ancient town about seventy miles W.N.W. from Madrid. A handbook, giving full syllabuses of the lectures, time-tables, lists of families taking boarders, hotels, details of the journey, suggested excursions and other information, may be obtained, after May 1st, price 6d., on application to the office of the Guild, 74, Gower Street, London, W.C.

It is proposed to purchase the buildings of the Royal Masonic Institution at Wood Green and to adapt them to the growing needs of the Home and Colonial Training College. The Council of the Training College already have some £20,000 in hand for this purpose and have made an appeal to the public for the remaining part of the £45,000 necessary to complete the purchase. In view of the glaringly insufficient provision for training the teachers of public elementary schools in this country it is devoutly to be wished that the appeal may prove successful, and that very quickly.

The February number of the *Journal of School Geography* contains an article on "The Geography of Greater London," by Mr. A. M. Davies, in which he shows that a large amount of valuable practical work in geography can be accomplished by an intelligent teacher even in densely populated districts like those of our great towns. It is incidentally pointed out that in such work as this it is impossible to divorce geography and history. "It may be that a geographical fact that has to be dug up from under a pile of historical facts has ceased to be of value to the teacher of geography. If so, there is not much of value to such a teacher within the house-covered area of London. But at least it would be well to make sure that the rejected facts are handed over to the teacher of history for his use." A sympathetic study of Mr. Davies's article will convince the teacher that lessons in both geography and history will benefit by practical work of the kind described.

Mr. Yoxall never writes on educational subjects without giving his readers a great deal to think about. We are glad to find him directing public attention, in the *Contemporary Review* for March, to our shockingly inadequate supply of training colleges for masters and mistresses in public elementary schools. Nearly seventeen thousand of our adult teachers possess no attested qualification for the work other than their willingness to confess themselves to be persons "over eighteen years of age" who can display proof of satisfactory vaccination. This is in no way because the pupil-teacher who has served an apprenticeship does not want to be trained. In 1898 so many as 9,392 young men and women matriculated to enter a training college, but in all such colleges together there were only 2,400 places available. What are the consequences? Here is one. Nearly thirty per cent. of the masters and over fifty per cent. of the mistresses at work in public elementary schools have received no collegiate training. Mr. Yoxall himself was years ago an elementary schoolmaster, and when he writes such a sentence as the following it is time the responsible authorities set about making the teacher's life a happier and a rosier one:—"Poorly paid, poorly pensioned, difficult and costly to enter, subject to the caprice and autocracy of irresponsible school managers, toilsome and exhausting in function, inspected, supervised and scrutinised without cessation, the occupation of elementary school teacher is one to be embarked on unwillingly and quitted without regret."

A facetious article in the *Educational Review* of March 8th exposes the erstwhile flourishing trade in fictitious, or ought we to write bogus, degrees of the National University of Chicago. The writer of the contribution rightly warns his readers not to confuse this mercantile centre with the excellent University of Chicago, so munificently endowed by Mr. J. D. Rockefeller, the work of which is something for the people of Chicago to look upon with pride. After the article in our contemporary, and after similar exposures in the lay press, we hope no schoolmaster will imagine this a short cut to a degree.

At the end of last year the Canadian Government offered to provide British schools with small handbooks and atlases dealing with the geography of Canada, as well as with bronze medals, to be awarded to the most successful pupils in an examination on the physical and political geography of the Dominion. A good many schools have already made use of the offer. The High Commissioner has renewed the suggestion and is anxious to see the experiment more widely tried. We should think that the plan would provide teachers with an excellent means of stimulating the study of an interesting and important subject.

SCOTTISH.

The Educational Handwork Association held their quarterly meeting in the City Public School, Glasgow. There was on exhibition an interesting collection of specimens illustrative of the various stages of "hand and eye training." Professor Cleland, the distinguished anatomist, in his address on "The Relations between Hand and Mind," gave scant support to those who base their advocacy of manual training on the supposition that the development of the higher brain centres is intimately connected with the development of the motor centres which control the hand, and which in their turn depend for development on the exercise of that organ. The present state of our knowledge did not justify that theory. It would be wise to justify handwork in education on psychological grounds rather than on the imperfect results of cerebral physiology. In exercising the hands and the eyes of their pupils teachers would be using the methods by which Nature had taught them so much already.

The Joint Committee on Secondary Education have forwarded to the University Courts of the Scottish Universities a petition praying that in the bursary competition of the various universities the standard of attainments and the standard of marks may be the same for modern as for ancient languages. The Committee believe that by the adoption of their petition the interests of Latin and Greek, with which they are in fullest sympathy, will still be fully conserved. This important question, notwithstanding the many resolutions on the subject, gets no "forrarder." The University Court of St. Andrews, after consideration of the subject, has refused to make any concession to the moderns.

At the beginning of the next financial year (April 1st, 1901), the administration of the Edinburgh Museum of Science and Art passes to the Scotch Education Department, and the director of the Museum, Mr. Grant Ogilvie, becomes an officer of that Department. The Museum will become the headquarters of the Department in Scotland, and deputations on educational subjects will be received there. The Secretary, or any other officer of the Department, will also attend there when in Scotland on official business. Every encouragement will be given to Science and Art classes to take advantage of the facilities for instruction at present offered in the Museum.

Mr. Balfour, in reply to questions in the House of Commons, said that the educational measures promised in the

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King's Speech included educational legislation for Scotland, and that the grievances *alleged* to exist in connection with the capricious dismissal of teachers were at present under the consideration of the Government. The first statement is entirely satisfactory, but the second is rather disquieting, especially in view of Sir John Gorst's definite pledge to deal with this subject in the Session of 1901. That statement implied that the existence of the grievances was already recognised, but Mr. Balfour's reply, if interpreted literally, means that the Government are considering whether there are really any grievances to redress.

A SPECIAL meeting of the Scottish Modern Language Association was held in the High School, Glasgow, Dr. Schlapp, Edinburgh, in the chair. The Secretary stated that having so far failed to get equality of treatment for modern languages from the University Courts, they were now going to approach the patrons of certain bursaries, asking them to make it a condition of the competion for the bursaries that modern languages should be placed on the same level as the classics. More than half the bursaries in the various universities were administered by patrons other than the Senate, and were unaffected by the particular ordinance which was the cause of all the trouble. The meeting afterwards resolved: "That honours should be awarded on the higher-grade papers, and that special honours papers should be discontinued."

WELSH.

THE result of the *plébiscite* as to the teaching of Welsh in Cardiff has been published. The question put to the parents was: Would they wish Welsh to be taught to their children if thereby some subject already taught would have to be dropped from the curriculum? The answer was taken between January 21st and February 26th by the attendance officers. From an analysis it appears that 4,061 parents voted in the affirmative, and 4,731 in the negative. It appears that 454 families voted for and 1,124 against. It further appears that the children were asked their opinion: 8,251 children wished the subject; 9,091 were against it. Further points reported in the voting are: 418 papers were blank; 18 spoiled; 875 voting papers were lost by parents; 884 papers were not collected owing to there not being any one at home when the collector called. The General Purposes Committee recommended on the result of the voting that the subject should be optional and not compulsory, so that those who desire that their children shall be taught Welsh may be satisfied, but it will be at the expense of another subject.

SIR LEWIS MORRIS is reported, in an interview, to have said that, in his opinion, the maintenance funds of the intermediate schools throughout the Principality were miserably inadequate, and the masters and mistresses all round underpaid. Asked his opinion as to the necessity of raising the half-penny rate to a penny, he is reported to have said, "The suggestion will have to be adopted throughout Wales, unless the system is to fall through." These are bold words; Sir Lewis Morris is to be congratulated on his courage. As to the curricula of the schools, Sir Lewis holds strong views of his own with which he cannot surely expect universal agreement. "In the case of the Glamorganshire and Monmouthshire valleys, the people were practically all connected with collieries and ironworks, and nothing else, and the object in view there should be to teach the young men, on the technical side, how to become intelligent workmen by working with their brains as well as with their hands. *It was ridiculous to give them a literary education.*" Sir Lewis seems to have forgotten that the Welsh Intermediate Schools are usually mixed schools for boys and girls. How are the schools to become technical, as he suggests, unless he also proposes that the girls, side by side with the boys in the class-rooms, are also to be prepared for the collieries and ironworks?

TRULY the Welsh Intermediate school system is destined to go through the fire of criticism. The Headmaster of one of the County schools has been speaking from the fulness of his heart, at Bangor, on the examination system of the Welsh Central Board. He complains that each specialist examiner reports on his special subject, with no knowledge of the unity or special circumstances of the school. "Then the chief Inspector has his say, and the eighty members of the Central Board their say, and then follows the Board of Education." To organise the examinations and produce that report cost the country last year £4,667 5s. 8d., an average of £50 3s. 8d. per school. Every pupil who paid a fee of from £5 to £6, on the average cost 12s. 7½d. to be examined.

WHILST Wales prides itself on being a very old country, it has all the characteristics of a new country educationally. There are great advantages in this. Wales has started a new University. It has a new system of intermediate education. Elementary education is entering on a new phase, with the encouragement by the Board of Education of syllabuses on the initiation of teachers for the approval of H.M.'s Inspectors. There is nothing to hinder the organisation and arrangement of educational agencies *ad hoc* to the conditions of Wales. Yet it is curious to note the clinging to the old traditions of English education, even in Wales. It is most opportune, therefore, that Mr. Goscombe John, in his address to the Honourable Society of Cymmrodorion, in London, should draw attention to the new movement in arts and handicraft education as peculiarly suitable to Wales. He pointed out that formerly Welsh furniture had its characteristic excellences, and urged that a collection of it should be made before it is too late. The efforts of the art section of the Eisteddfod should be devoted more strictly to the educational aspect of art, and should above all things direct and encourage, and not alone reward. Genius in art could not be discovered by prize-givings, neither could a national school of art be founded by even a lavish distribution of rewards. It is the study of natural forms which gives life and spirit to the designs of art-craftsmen. Therein lie the great possibilities of a country like Wales for the encouragement and development of arts and crafts education.

CURRENT HISTORY.

THE accession of a new sovereign to the Brito-Irish throne has incidentally been the occasion of much revelation to the public of parts of our constitution which ordinarily remain unknown except to experts. We have learnt from the newspapers what a civil list is and of what items it is composed. We know what our sovereign is expected to think of certain "Roman Catholic" doctrines. We have changed the National Anthem and the Prayer-Book of the Established Church. We have learned why "King's Counsel" are so called. Our readers have therefore had many an opportunity for explaining to their pupils something of the way in which we are governed. We assume they have taken an enlightened interest in these unusual items of newspaper intelligence, and we therefore do not further comment. Happy is the schoolmaster whose time table allows of the intercalation with his normal lessons of such suitable "object lessons" in current history. If in no other way, they could be used as materials for English essays in the higher forms.

BESIDES these illustrations of our old institutions, we note also some changes which are taking place. The Secretary for Foreign Affairs is a member of the House of Lords, and the Cabinet has thought it wise to limit the discretion of the Under-

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Secretary who represents him in the House of Commons in the answering of questions. Now the Parliament is, as its name implies, a *talking* thing, its original reason for existence being a *talk* between the king's ministers and the representatives of the political part of the nation. If, therefore, for any reason, this function of the House of Commons is diminished, we, whose object is to note history in the making, must take special notice of the change, however slight. Of the justification for the change, or for the opposition thereto, we also make note, but it is outside the province of history, as now understood, to decide between the combatants. Again, an old maxim of our constitution has been that which is briefly summarised as "grievances before supply." This has translated itself into action by the now all but purely formal postponemant of the Appropriation Bill to the very end of each session, and by the right of members of the House of Commons to move amendments to the motion that the House go into Committee of Ways and Means. We therefore note again the recent resolution of the House at the proposal of the "Government" to deprive itself of this latter privilege. Our only comment on these changes shall be to point out that it is, to a large extent, to the influence of foreign affairs, of international history, in other words, of war or the possibility thereof, that they are due. So it has always been: so apparently it is still. Yet text-books rarely present this clearly. One would imagine, to read some "constitutional histories," that England was hermetically sealed to all influences from abroad.

Charles Mary Francis of Assisi Pascal Ferdinand Antony of Padua Francis of Paula Alphonso Andrew Avellano Tancred, second son of the Count of Caserta, has lately married the Princess of the Asturias, the elder sister of the King of Spain, who would have been Queen of Spain if he had not been born a boy shortly after the death of his father, Alfonso XII. Now the Count of Caserta is the brother and heir of Francis II., who was driven from his Neapolitan throne in 1860 by Garibaldi, and he is therefore a "legitimate" sovereign dispossessed by revolution. He has also assisted "Don Carlos," whose grandfather would have been King of Spain in 1833, if his brother, Ferdinand VII., had not repealed in his daughter's favour the "Salic Law," which had been adopted in Spain when first Bourbons began to rule there at the beginning of the eighteenth century. Both these "claimants" belong to the "clerical" party as opposed to the "liberal": continental politics now for many years having turned on the struggle between the State as such and the Church as organised in its clergy. Hence, to some extent, the riots which have arisen lately in Spain and the unpopularity of the marriage. For if Alfonso XIII. were to die without issue, and he is as yet only a boy, Prince Charles would be king-consort. To understand more of this Spanish history, read Martin Hume's excellent book, "Modern Spain," in the "Story of the Nations" Series.

We have to acknowledge, with thanks, a copy of No. 162 of the Proceedings of the American Philosophical Society, the greater part of which is devoted to history. There is a calendar of the correspondence of Major-General Nathanael Greene, of the U.S. army in the revolutionary war, and an article on American history of the same period from German archives. These, of which a list is given, both of unpublished and published, reveal to us many details with reference to the employment of German troops by the Elector of Hanover in his attempt to suppress the revolt which American colonies were making against his authority as King of Great Britain and Ireland. It is a profitable study for Englishmen to learn how German peasants were sold by their princes, and how it was desired that they should die rather than return to receive pensions as disabled.

RECENT HISTORICAL NOVELS.

Our batch of historical novels this month includes two books which are distinctly for grown-ups (Nos. 3 and 5), one which is mainly for young people (No. 4), and two more which are "for all markets." They are all interesting in different ways; they all deal with comparatively modern times; and they none of them deal (as did our last month's batch) with great historical personages.

(1) Eleanor C. Price. "The Heiress of the Forest: a Romance of Old Anjou." [382 pp.] (Isbister.) 6s.—The forest is that of Montaigle, and the period is the 'eighties of the seventeenth century. The natural features of Anjou are described as sympathetically as in Mr. Hewlett's "Richard Yea-and-Nay;" but in addition to "the golden broom of that Plantagenet country," we have here a vivid picture of the social life, high and low, of that province in the days of Louis XIV. The immense power of the French noble on his own estates is the main burden of the tale; but as dominant features in the background, we have the paramount power of the Grand Monarque and the struggle at his court between the rival factions of Madame de Montespan and of Madame de Maintenon. Part of the action of the story takes place at Fontevrault, where lie buried the first three Angevin kings of England.

(2) Frank Savile. "The Blessing of Esau: a Romance of the Marchlands." [324 pp.; pictured cover.] (Sampson Low.) 6s.—The "Marchlands" in question are variously represented as being "ground between the millstones of Austria and Islam on either side," and as "crumbling to dust between the anvil of the Crescent and the hammer of the Cross." The particular incident in the grinding and crushing process which is here chosen for treatment took place sometime about 1715, and the historical personage chiefly concerned is Marlborough's "brother-in-arms," Prince Eugene of Savoy. Mr. Savile manages his story well; he writes vigorously and describes his country clearly; he makes his characters distinct living beings, and he gives one an admirable generalised picture of the war between Turk and "Slav." Unfortunately—from the point of view adopted in these columns—he has chosen to write rather a historical "romance" than a historical "novel," and has joined the ranks of those who have taken liberties with the geography of the Balkan Peninsula. His "Illuria" is just as difficult to locate on the map as Mr. Anthony Hope's "Ruritania" or Miss Sydney Grier's "Thracia." Still Mr. Savile loves Scotsmen and horses, and writes a story which one does not readily lay down when it is once begun.

(3) M. E. Braddon. "The Infidel: a Story of the Great Revival." [341 pp.] (Simpkin.) 6s.—Miss Braddon's "Infidel" is the daughter of an unfrocked parson who first helps her father as a Grub Street journalist and playwright, then by marriage becomes a great lady, and finally comes under the influence of the Methodist Revival, both on the Whitefield and on the Wesley sides. The heroine is a fine character, and her principal associates are perfectly possible people moving amid varied scenes which are certainly life-like, and appear to be quite in accordance with historical truth. Part of the story takes place in Western Ireland and in Italy, but most of it in London, during the 'fifties of the eighteenth century, culminating in the "Great Year" of 1759. Those who know Miss Braddon only as the author of "Lady Audley's Secret" would be surprised at the very different qualities exhibited in this book. We should particularly like to commend this book to all teachers who do not share Mr. A. J. Balfour's fondness for the eighteenth century, but who have to give lessons on the period; it is a sympathetic, interesting and illuminating piece of imaginative restoration.

(4) Eliza F. Pollard. "My Lady Marcia: a Story of

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the French Revolution." [512 pp.; 6 ill.] (Nelson.) 5s.—The Lady Marcia loses her father, an English earl, at the siege of Yorktown, and is brought up by her father's sister who has married a French marquis. She spends most of her girlhood at her uncle's chateau near Tours, but is in Paris during the first three or four years of the first French Revolution. Hence we get the usual revolutionary "mixture"—Bastille, Marie Antoinette, Reign of Terror, Ninth Thermidor—moderately well mixed and moderately appetising. But Miss Pollard throws in one ingredient which is fresh (to us, at any rate). My Lady Marcia began by being annoyed with kings in general, because George III.'s stupidity had caused her father's death, but she is converted by the Paris mob into a warm adherent and would-be rescuer of the French Queen.

(5) SAMUEL GORDON. "Sons of the Covenant: a Tale of Anglo-Jewry." [384 pp.] (Sands.) 6s.—This is a story of modern Jews for modern London. How, then, can it be called "historical"? The answer, we take it, is that any book which, like the present one, helps us to understand the Jewish character must help us to understand the past and to anticipate the future. For the Jews have supplied at least the nucleus of the only two successful "universal religions"—Christianity and Islam; and they are the only people who are equally at home in east and west. Is it possible to imagine, say, India and Britain being *welded into one* except by "Sons of the Covenant"?

RECENT SCHOOL BOOKS.

Modern Languages.

A Concise French Grammar, for Use in Upper and Middle Forms. By A. H. Wall, M.A. xiv. + 245 pp. (Oxford, Clarendon Press.) 4s. 6d.—This is a work which in many respects deserves high commendation. It is clear, trustworthy and well printed. It embraces first a very brief historical introduction, followed by an account of the speech-sounds and their symbols, which is satisfactory on the whole, especially if we consider how little room is given to the subject, and the inaccuracy of the statements about phonology in most grammars in use. The terms "labial" and "palatal" for "rounded" and "unrounded," applied to vowels, convey an altogether wrong impression; and something more should have been said about the French *r* than that it is "palatal." No distinction is drawn between the open and close *eu*. It is unfortunate that the alphabet of the *Association Phonétique Internationale* has not been adopted here, as it has been in almost all recently published books which treat of the pronunciation in a scientific spirit. The remarks about accent and *liaison* are excellent. The accidence is quite clear, and admirably adapted for purposes of reference; all important exceptions appear. The space given to the "rules" for determining the gender of nouns seems excessive; the only practical method, after all, is to form a close association of article and noun by frequent repetition. The treatment of the verb is very good. The fourth section of the book is devoted to the Syntax, of which it may be said that only the broad outlines are given. In some cases a historical explanation would have been useful as well as interesting. The advisability of separating Accidence and Syntax in a book of this kind may well be doubted. The proof was evidently read with great care; the only mistake we have noticed was the absence of *que* at the end of the first line on p. 182.

Dictionary of Quotations (French and Italian). By T. B. Harbottle and P. H. Dalbiac. 565 pp. (Swan Sonnenschein.) 7s. 6d.—This volume is to be regarded as a valuable addition to our books of reference, and should be on the shelves of everyone interested in literature. The arrangement is excellent; the references, as far as we have tested them, are correct, and there is an English rendering of each foreign quotation, which always gives the meaning, and is sometimes exceptionally well expressed. The authors' and subjects' indexes have been prepared with care. From the preface we learn with pleasure that a volume of quotations from German, Spanish, and other sources is in preparation. Our sincere thanks are due to the compilers for their conscientious work.

V. Patrice, Au Pôle en Ballon. Edited by P. Shaw Jeffrey. xx. + 172 pp. (Macmillan.) 2s.—This is a capital story of moderate difficulty. There is plenty of incident and some humour in the narrative of this first visit to the North Pole, and we are sure that boys will be delighted with it. The notes are excellently worded, and supply all that is necessary. There is little to which objection can be raised; we certainly see no advantage in telling the reader that *alerte et dispos* is "a hendiadys." In the note on p. 40, 1, 7, the reason should have been given why the *que* used to avoid repetition of *si* takes the subjunctive. The use of *darüber* in German is not parallel to that of *au-dessus* for "above them" (p. 54, 1, 27). The vocabulary is not as full as it should be. There are the usual appendices with words, phrases, and passages for retranslation.

Classics.

Demosthenes. Speech against Meidias. By J. R. King, M.A. xv. + 119 pp. (Clarendon Press.) 3s. 6d.—The introduction gives an account of the strained relations between the orator and Meidias, culminating in the public assault made by the latter, for which he was prosecuted. The text and apparatus criticus are those of Professor Butcher. The editor's notes are full and scholarly, and will be of the highest service to the student. A curious inversion of two letters in the name of *Brugmann* has been overlooked on p. 90, and a more important error has crept in on p. 48, where *syllabic* should be *temporal* augment.

Xenophon. Anabasis I.-II. By A. Jagger, B.A. xxxiii. + 203 pp. (Blackwood.) 1s. 6d.—There is here a very liberal amount for the money, plenty of introduction, illustrations, chiefly of armour and battles, including a full-length coloured plate of a hoplite, text, notes, valuable appendices, vocabulary, and map. There are certain "elementary hints" which teachers would be glad to find duly regarded. Here, for instance, is something which one often has to enforce: "The ancient writers were rational men, and what they wrote was intended to convey some impression on the mind." There is rather too much in the notes, words being sometimes translated just as they appear in the vocabulary.

Macmillan's Latin Course. Third Part. By W. E. P. Pantin, M.A. xii. + 310 pp. (Macmillan.) 3s. 6d.—This volume consists of exercises in continuous prose, led up to by detached sentences embodying particular rules which have been found of some difficulty. It will be found very useful to be taken up after the pupil has had experience of a course of simple sentences. A large part—consisting of 184 pages—is given up to rules, hints, examples, and preliminary exercises, the rest to pieces of prose, with assistanee given at the foot of the page. The selections are varied and more interesting than those often found. The last four are on M. Caecilius Rhodius.

The Preceptors' Latin Course. By B. J. Hayes, M.A. viii. + 264 pp. (Clive.) 2s. 6d.—The inside of the cover and the

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flyleaves of this book are used for putting together the declension of several nouns, adjectives and pronouns, and the conjugation of regular and certain irregular verbs. The exercises follow the usual class of sentences, and appear to be well graded. In the vocabularies English derivatives are put after many of the Latin words. Some points call for adverse notice. The pronunciations assigned to *ō*, *ae*, and *eu* are incorrect; the genitive plural of *celer* is stated to be *celerium*; and the cases are not adequately treated. Thus there is no mention (to take a few examples) of the accusative of kindred meaning, the dative of possession with *sum*, or the objective genitive, all surely worth a place in a "course." Again, the ablative absolute is referred to "time when," and the locative is hardly touched. The presence of such blemishes makes it impossible for us to recommend the book very cordially.

Bell's Latin Course. Part I. By E. C. Marchant, M.A., and J. G. Spencer, B.A. vii. + 99 pp. (Bell.) 1*s.* 6*d.*—This book is well worth a trial by those whose task it is to introduce the Latin language to children. The idea is to teach from the beginning by means of simple sentences aided by pictures—in some cases highly coloured to attract and keep alive the young interest. The exercises are carefully graduated, and avoid absurdity, but, alas, there are several about "the Queen of Britain," which will now have to be altered to the past tense. The words are so chosen that nothing will hereafter have to be discarded.

Euripides. Hecuba. By C. B. Heberden, M.A. 140 pp. (Clarendon Press.) 2*s.* 6*d.*—The name of the Principal of Brasenose is a guarantee of critical skill and sound scholarship, which are here at work to produce a very pleasant and helpful edition of the play. The introduction is short and makes us wish for more, *e.g.*, on the beauties of Euripides. The views on the structure of certain of the choric metres are those of Blass as against the usually received analyses.

A Second Latin Reader. By G. B. Gardiner, M.A., D.Sc., and A. Gardiner, M.A. vii. + 184 pp. (Arnold.) 1*s.* 6*d.*—A comparison of this book with others, would have informed us, if we had not known it before, that the use of "second," "third," &c. is merely relative. We have here several selections similar to those of "Scalae Tertiae," while other authors are made to contribute extracts. With these there are many bits after the manner of "Gradatim," imaginary conversations, and the like, the whole number of pieces amounting to 165. The notes are numerous and short, consisting of idiomatic translations interspersed with very terse grammatical explanations, and the vocabulary is satisfactory.

Grammar and Composition.

The Intermediate English Grammar. By Charles Hart, B.A. x. + 242 pp. (Hachette.)—A reviewer does not need a long experience before he begins to marvel at the tender solicitude for the welfare of students in secondary schools and colleges displayed by the writers of books. Private enterprise compares very favourably with the efforts of the State in this direction. Zeal, however, should be tempered with discretion. There are, for instance, so many text-books on English grammar from which this interesting class of young persons may choose that we doubt whether Mr. Hart was wise in adding to the number. There is very little of a distinctive character in his book, though we are inclined to agree with him when he says that foreign students will find his chapter on the idiomatic use of prepositions "of exceptional value." A foreigner will certainly have nothing to unlearn after he has read through Mr. Hart's volume, but English students will not find it exceptionally useful.

History.

Annals of Politics and Culture. (1492-1899.) By G. P. Gooch. (Cambridge University Press.) ix. + 530 pp. 7*s.* 6*d.* net.—Mr. Gooch has given us a manual of all that Western Europeans have done since the end of the fifteenth century. "Political" events are given in concise numbered paragraphs on the left-hand pages, while on the right are events of "culture," *i.e.*, church history, literature, philosophy, science, social life, &c. In this admirable compilation he has been assisted by experts in every branch of historical knowledge, and the result is what promises to be a very useful handbook. We suppose that no division of historical events would avoid all difficulties: otherwise we might mention some points in which the book is confusing. The history of the English "Independents," *e.g.*, gets scattered between "America" and "English Church," and, turning the pages at random, we find Cotton Mather's "Magnalia" (a curious contraction, by the way, of the full title of the book) under the heading, not of "history," where we might expect it, but under "American Literature." However, a very full index of subjects serves to minimise the inconveniences of such difficulties, and we anticipate that the book will become a standard work of reference. The first three centuries covered by the book get about ninety to a hundred pages each; the century ending 1892 has 174. Surely this is another example of that want of due proportion which is the fault of all historians "up to date." Mark Twain's "Tramp Abroad," for example, will not appear in a similar work written 100 years hence.

Edited Books.

Genesis. Edited by T. C. Fry, D.D. [Books of the Bible.] 140 pp. (Rivingtons.) 1*s.* 6*d.*—Dr. Fry has evidently been at no small pains in selecting the material for this very useful little volume. The introduction clearly and briefly supplies all that is needed in the way of information as to the authorship and kindred questions raised by this book. The section which treats of the religious ideas of Genesis is admirably handled, and the appendix will prove of material assistance. A little volume marked by great honesty and common sense.

Bacon's New Atlantis. By G. C. Moore Smith. 128 pp. (Pitt Press.)—The Syndics of the Cambridge University Press have followed up the publication of Moore's "Utopia" by the issue of this ably-edited volume. In itself that fact is significant, and it may be hoped that more of the numerous schemes of political felicity which are to be found in English literature, equally excellent for their philosophy and their style, may by degrees find their way into the hands of students for examination. No sane person desires to see immaturity fired with ardent political zeal. The spectacle is sometimes ludicrous and often revolting; but it may be doubted whether anything but good would result from making political theory and the philosophy of history more prominent features in the education of upper-form boys, and especially of those who are not likely to proceed after their school-days to a university. Mr. Masterman supplies a learned introduction, which might have been more attractively arranged. The quotations are heavy, and there is too much of Abbot, Spedding and Cowley in it. It is, however, notable for one acute criticism, namely, that "in the intellectual sphere Bacon was a reformer and an idealist, in the social and political sphere a conservative and conformist." The section dealing with Bacon's grammar is modelled upon the well-known work of Dr. Abbott which deals with Shakespeare's. It will probably prove acceptable to pure grammarians. The notes are scanty and brief, like the text itself; but the glossary is elaborate, and the index is tolerably full. Much in a little.

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Geography.

The "Diagram" Atlas of South Africa. Edited by B. B. Dickinson, M.A., F.R.G.S., and A. W. Andrews, F.R.G.S. With an introduction by A. J. Herbertson, Ph.D., F.R.G.S.—For general remarks on the Diagram Company's series of maps we cannot do better than refer our readers to Dr. Mill's remarks in the February number of THE SCHOOL WORLD. The South Africa Atlas contains seven maps, which fully bear out the opinions there expressed. We advise every teacher who believes in the educational value of geography to get a supply of these hand-maps. The present Atlas makes a timely appearance, and will be well received. We notice that the position of Cape Town is not indicated on No. 1. We were under the impression that British Central Africa had telegraphic communication with Quelimane; the line is not shown in the map No. 7.

Science and Technology.

Laboratory Companion for use with Shenstone's "Inorganic Chemistry." By W. A. Shenstone, F.R.S. viii.+117 pp. (Arnold.) 1*s.* 6*d.*—Many teachers will welcome this practical companion to Mr. Shenstone's excellent "Inorganic Chemistry" recently published. The arrangement of experiments is good, and the retention of the numbered paragraphs from the larger manual is a distinct advantage for reference. The amount of physical work in the book should prove advantageous rather than otherwise, especially where the science master has control of both departments. The error on p. 21 relative to the weight of 1 cc. of water, which was pointed out in our notice of the author's larger book, has not been corrected.

Miscellaneous.

Education in the Nineteenth Century. Edited by R. D. Roberts, M.A., D.Sc. xi. + 274 pp. (Cambridge University Press.) 4*s.*—These lectures, delivered in the educational section of the Cambridge University Extension summer meeting in August, 1900, reflect in a remarkable manner some of the deficiencies of English education. The essays, taken separately, are clear, scholarly expositions of the work accomplished in individual plots of the extensive field of our national education. But each of the eminent specialists who contributes to the volume is a law unto himself; the absence of a presiding genius with a broad, sympathetic knowledge of the whole problem of producing an educated nation, has led to a provoking amount of repetition, as well as to many irritating omissions. The circumstances in which the lectures were delivered are sufficient to explain the shortcomings of the book as an account of education in the nineteenth century, though we cannot but wish the editor had taken steps to supplement the lectures in such a manner that a complete sketch of the subject mentioned in the title of the volume should be at the disposal of the reader. It is difficult to understand how the choice of subjects was made; lectures on the teaching of history and science are included, but all other school studies are ignored. Though commercial and higher elementary education have both received so much attention during the last decade, neither is taken into account in the volume; the provisions for art teaching and instruction in domestic science throughout the country are similarly given no place. But what is provided is of the first quality, and we can unhesitatingly recommend the volume to the ever increasing body of persons interested in education. It will be sufficient, to convince our readers that this is a book to be secured, to name a few of the thirteen contributors. The Master of Trinity takes up "Christian Work in Public Schools," Sir Richard Jebb describes the "University Extension Movement," Mr. Sadler deals with "National Education and Social Ideals," and Prof. Rein, of Jena, discusses the "Outlines of the Development of Educational Ideas during the Century."

SCOTCH LEAVING CERTIFICATE EXAMINATIONS, 1901.

Revision Test Papers.

HIGHER GRADE.

THE papers in each of the following subjects cover the whole of the syllabus for the examination, which will take place in June next.

Copies of the papers in any of the subjects can be obtained in a form suitable for distribution in class. The reprinted papers are sold in packets of twenty-five at a cost of 6d. net for each subject. The papers may be ordered through a bookseller, or they may be obtained (post free) from the Editors of THE SCHOOL WORLD, but in the latter case all orders *must be prepaid.*

English Grammar and Literature.

(1) Write an essay on one of the following subjects:—
  (i.) War—its good and evil.
  (ii.) The respective advantages of Classics and Modern Languages.
  (iii.) The uses of books.

(2) Paraphrase:—

This is the state of man; to-day he puts forth
The tender leaves of hope, to-morrow blossoms
And bears his blushing honours *thick* upon him;
The third *day* comes a frost, a killing frost;
And—when he thinks, good easy man, full surely
His greatness is a *ripening*—nips his root,
And then he falls, *as* I do. I have ventured
Like little wanton boys that swim on bladders,
This many *summers* in a sea of glory;
But *far* beyond my depth. My high-blown pride
At length broke under me; and now has left me
Weary, and old with service, to the mercy
Of a rude stream that must for ever hide me.

(3) Parse the words in italics.

(4) Give the sources from which the following words came into the language. Comment where necessary on derivation or formation:—priest, captain, vixen, rhyme, rhythm, hotel, boycott, glen, chief, telephone.

(5) Illustrate the main phonetic defects of the English alphabet.

(6) Define as accurately as you can, and give an example of each where possible:—elegy, sonnet, euphuism, comedy, epic, ballad, epigram, pastoral, poem.

(7) Distinguish between—gerunds and participles, simple infinitive and gerundial infinitive.

(8) Distinguish between the meanings of—*effectively* and *effectually*, *judicious* and *judicial*, *spacious* and *specious*, *eruption* and *irruption.*

(9) Give the leading characteristics of the literary period you have been studying. Name the chief writers, and quote some lines from any one of them.

(10) Name the leading characters in any one of Shakespeare's plays. Give a brief sketch of the one you like best.

(11) Compare the proportion of Teutonic and classical elements in modern English. How does this proportion stand in the vocabulary of every-day speech? Account for the difference.

History.

(1) Write brief notices of any *eight* of the following, selecting *two* from each group:—

Persons.—Stephen Langton, Harold, A'Becket, Wolsey, King-maker, Cromwell, Marlborough, Chatham, Peel, Nelson.

Terms.—Ceorl, fief, danegeld, mortmain, benevolences, ship-money, wergeld, attainder, protection, non-juror.

Statutes.—Provisions of Oxford, Statute of Liveries, Statute of Labourers, Habeas Corpus Act, Test Act, Stamp Act, Navigation Laws, Poyning's Act, Corn Laws, Statute of Six Articles.

Events.—Reforms of Henry I., Mise of Lewis, Peasants' Revolt, Pilgrimage of Grace, Solemn League and Covenant, Bill of Rights, Poor Laws, Causes of Seven Years' War, First Reform Bill.

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(2) What is the date of the First Cruade? How many Crusades were there, and how far did they succeed in the objects aimed at? With what Crusades were English kings or princes connected?

(3) Account for the decline or increase of the power of the crown in the time of (*a*) the Lancastrians, or (*b*) the Tudors, or (*c*) the Georges.

(4) Give a detailed account of any one of the following:—The influence upon Scottish history of the alliance with France; the rise and progress of the Reformation in the reign of Henry VIII.; the points in dispute between Charles I. and his Parliament; the extension of the franchise in the nineteenth century; social and political results of Norman Conquest; social and political changes resulting from the Wars of the Roses.

(5) Distinguish, with illustrations from history, between the real and the imaginary interests of Britain in the affairs of the Continent.

Geography.

(1) What parts of Scotland have (i.) the greatest density of population, (ii.) the least density. Explain why such difference should exist.

(2) Give an account of *one* of the following—Afghanistan, Manchuria, Congo Free State, Newfoundland.

(3) Give a detailed account of the productions and the exports of Australia. Name its chief seaports.

(4) Draw a sketch map, *or* give a description, of the basins of *two* of the following rivers: indicate the position and the importance of the chief towns on the banks of the selected two—Thames, Rhine, St. Lawrence, Ganges, Yang-tse-kiang, Nile.

(5) Give an account of the Antarctic Regions.

(6) Select any ten towns and show why they grew up where they are.

(7) Give an account of the mountains and plains of North America.

(8) Describe the coast line of South America, beginning at the Orinoco, and noting the capes, river-mouths and ports.

(9) Define "isotherm." Explain fully why isotherms do not necessarily coincide with parallels of latitude.

(10) What do you know about the subterranean heat of the earth, and its effects—past and present?

(11) Why do sailors, circumnavigating the world, require to add a day to the calendar, or subtract one from it?

(12) Explain fully and carefully *two* of the following:—(i.) the solstices, (ii.) monsoons, (iii.) formation of glaciers and their effects, (iv.) why the surface water of the sea varies in saltness in different places, (v.) why the air grows colder as we ascend a mountain, (vi.) the effect of the sea on the configuration of the land.

(13) Name the chief foreign possessions of any *two* of the following countries:—Holland, Russia, Denmark, Italy. What is the particular importance of each of those you name?

Latin.

(1) Translate into Latin:—

In this condition of things Lucius Cæsar arrived with the answer from Rimini. A council of war was held at Teano to consider it; and the flames which had burnt so hotly at the beginning of the month were found to have somewhat cooled. Cato's friend, Favonius, was still defiant; but the rest, even Cato himself, had grown more modest. Pompey, it was plain, had no army, and could not raise an army. Cæsar spoke fairly. It might be only treachery, but the Senate had left their families and their property in Rome. The public money was in Rome. They were willing to consent that Cæsar should be consul, since so it must be. Unluckily for themselves, they left Pompey to draw up their reply. Pompey entrusted the duty to an incapable person named Sestius, and the answer was ill-written, awkward, and wanting on the only point which would have proved his sincerity.—Froude.

(2) Translate into English:—

(*a*) Ad ea Hannibal respondit, omnia simul facere Hirpinos Samnitesque, et indicare clades suas et petere praesidium et queri in defensos se neglectosque. Indicandum autem primum fuisse, dein petendum praesidium, postremo, ni impetraretur, tum denique querendum, frustra opem imploratam. Exercitum sese non in agrum Hirpinum Samnitemve, ne et ipse oneri esset, sed in proxima loca sociorum populi Romani adducturum. Iis populandis et militem suum repleturum se et metu procul ab iis summoturum hostes. Quod ad bellum Romanum attineret, si Trasumenni quam Trebiae, si Cannarum quam Trasumenni pugna nobilior esset, Cannarum quoque se memoriam obscuram maiore et clariore victoria facturum.—Livy, xxiii., 43.

(*b*) Vix ea fatus erat media cum sede senatus
constitit alma Venus, nulli cernenda, suique
Cæsaris eripuit membris nec in aëra solvi
passa recentem animam caelestibus intulit astris.
dumque tulit, lumen capere atque ignescere sensit,
emisitque sinu. Luna volat altius illa,
flammiferumque trahens spatioso limite crinem
stella micat: natique videns benefacta fatetur
esse suis maiora, et vinci gaudet ab illo.
Ovid, Met. xv., 862.

(3) Translate into Latin:—

(*a*) However that may be, it is certain that it is madness to remain here any longer.

(*b*) He said that, whether reinforcements arrived before midnight or not, he would draw up the army in line of battle next day, as soon as opportunity was given him.

(*c*) We could not tell how long the Dictator would delay, but we feared that he would have cause to regret his inaction.

(*d*) They were so far from granting his demands that, unless they had been compelled, they would not have listened to him.

(4) (*a*) Construct short sentences to exhibit the uses of—*convenio, gratulor, deficio, eripio.*

(*b*) Distinguish by meaning and use—*quisquam, quisquis, quisque, ullus, quivis.*

(*c*) Explain (giving examples) what is meant by a *frequentative verb*; *the infinitive of surprise*; *the genitive of price*; *the predicative dative*; *the ablative absolute.*

(5) Give an account of Hannibal's journey from *Carthago Nova* to *Cannae.*

French.

(1) Translate into English:—

(*a*) Pendant tout ce grand mouvement du monde, le roi de France faisait ses affaires à petit bruit. L'honneur à Richard, à lui le profit; il semblait résigné au partage. Richard reste chargé de la cause de la chrétienté, s'amuse aux aventures, aux grands coups d'épée, s'immortalise et s'appauvrit. Philippe, qui est parti en jurant de ne point nuire à son rival, ne perd point de temps; il passe à Rome pour demander au pape d'être délié de son serment. Il entre en France à temps pour partager la Flandre, à la mort de Philippe d'Alsace; il oblige sa fille et son gendre, le comte de Hainaut, d'en laisser une partie comme douaire à sa veuve; mais il garde pour lui-même l'Artois et Saint-Omer, en mémoire de sa femme Isabelle de Flandre. Cependant, il excite les Aquitains à la révolte, et il encourage le frère de Richard à se saisir du trône. Les renards font leur main dans l'absence du lion. Qui sait s'il reviendra? Il se fera probablement tuer ou prendre. Il fut pris en effet, pris par des chrétiens, en trahison. Ce même duc d'Autriche qu'il avait outragé, dont il avait jeté la bannière dans les fossés de Saint-Jean d'Acre, le surprit passant incognito sur ses terres, et le livra à l'empereur Henri VI.—Michelet.

(*b*) A la fin de juillet les villages sont vides.
Depuis longtemps déjà des nuages livides,
Menaçant d'un prochain orage à l'occident,
Conseillaient la récolte au laboureur prudent.
Donc, voici la moisson, et bientôt la vendange:
On aiguise les faux, on prépare la grange,
Et tous les paysans, dès l'aube rassemblés,
Joyeux, vont à la fête opulente des blés.—F. Coppée.

(2) Translate into French:—

Between 1792 and 1809 Joubert had married. His life was passed between Villeneuve-sur-Yonne, where his wife's family lived—a pretty little Burgundian town, by which the Lyons railroad now passes—and Paris. Here, in a house in the Rue St.-Honoré, in a room very high up, and admitting plenty of the light which he so loved—a room from which he saw, in his own words, "a great deal of sky and very little earth"—among the treasures of a library collected with infinite pains, taste, and skill, from which every book he thought ill of was rigidly ex-

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cluded—he would never possess either a complete Voltaire or a complete Rousseau—the happiest hours of his life were passed. —M. Arnold.

(3) Give an anecdote to illustrate *one* of the two following proverbs :—

Tout ce qui reluit n'est pas or.
On récolte ce qu'on a semé. (Answer in French).

(4) Put the following sentences into the negative :—

Va-t'en. J'ai un ami fidèle. Donnez-moi encore du potage. J'ai fait quelque chose dont je me repens. Je connais quelqu'un qui pourra vous aider.

(5) Criticise and correct the syntax of the following sentences :—

(*a*) Le Pape envoya le Formulaire tel qu'on lui demandait (Racine).
(*b*) Je veux sur toutes choses que vous soyez contente, et quand vous la serez, je la serai (Mme. de Sévigné).
(*c*) Il reçut sur sa tête un coup de sabre (Racine).
(*d*) Je ne vois plus que vous qui la puisse défendre (Racine).
(*e*) Sais-tu que ce vieillard fut la même vertu? (Corneille).

Answer only one of the following:

(6) Mention six of the principal writers of either the seventeenth century, *or* the eighteenth century, *or* the Romantic School, and write a short note on each.

(7) What French writers have had most influence on English literature, and in what way?

(8) Translate into modern French, and write etymological notes on the words in italics :—

Dist Oliviers: " Païen *unt* grant esforz,
De nos Franceis m'i semblet aveir *mult* poi.
Cumpainz Rollanz, *Kar* sunez vostre corn :
Si l'orrat Carles, si returnerat l'oz.

(9) Write out an invoice for goods you are despatching to one of your customers, and write a letter informing him that you have executed his order, and are drawing on him at such or such a date.

German.

SECTION I.—TRANSLATION AND COMPOSITION.

(1) Translate into English :—

(*a*) Allerliebſt ſchoſſen die goldenen Sonnenlichter durch das dichte Tannengrün. Eine natürliche Treppe bildeten die Baumwurzeln. Überall ſchwellende Moosbänke; denn die Steine ſind fußhoch von den ſchönſten Moosarten, wie mit hellgrünen Sammetpolſtern, bewachſen. Liebliche Kühle und träumeriſches Quellengemurmel. Hier und da ſieht man, wie das Waſſer unter den Steinen ſilberhell hinrieſelt und die nackten Baumwurzeln und Faſern beſpült. Wenn man ſich nach dieſem Treiben hinabbeugt ſo belauſcht man gleichſam die geheime Bildungsgeſchichte der Pflanzen und das ruhige Herzklopfen des Berges. An manchen Orten ſprudelt das Waſſer aus den Steinen und Wurzeln ſtärker hervor und bildet kleine Kaskaden. Da läßt ſich gut ſitzen. Es murmelt und rauſcht ſo wunderbar; die Vögel ſingen abgebrochene Sehnſuchtslaute; die Bäume flüſtern wie mit tauſend Zungen; wie mit tauſend Augen ſchauen uns an die ſeltſamen Bergblumen, die ſtrecken nach uns aus die wunderſam breiten, drollig gezackten Blätter; ſpielend flimmern hin und her die luſtigen Sonnenſtrahlen; die ſinnigen Kräutlein erzählen ſich grüne Märchen; es iſt Alles wie verzaubert.

H. Heine.—(Die Harzreiſe.)

(*b*) Die ihr den Niedern ſo verachtet,
Vornehme Müßiggänger, wißt,
Daß ſelbſt der Stolz, mit dem ihr ſie betrachtet,
Daß euer Vorzug ſelbſt, aus dem ihr ſie verachtet,
Auf ihren Fleiß gegründet iſt.
Iſt der, der ſich und euch durch ſeine Händ' ernährt,
Nichts Beſſres als Verachtung werth?
Geſetzt, du hätteſt beſſ're Sitten:
So iſt der Vorzug doch nicht dein.
Denn ſtammteſt du aus ihren Hütten,
So hätteſt du auch ihre Sitten,
Und was du biſt, und mehr, das würden ſie auch ſein,
Wenn ſie wie du erzogen wären.
Dich kann die Welt ſehr leicht, ihn aber nicht entbehren.

Gellert.—(Fabeln und Erzählungen.)

(2) Translate into German :

I must tell you a feat of my dog Beau. Walking by the river-side, I observed some water-lilies floating at a distance from the bank. They are a large white flower, with an orange-coloured eye, very beautiful. I had a desire to gather one, and having your long cane in my hand, by the help of it endeavoured to bring one of them within my reach. But the attempt proved vain, and I walked forward. Beau had all the while observed me atttentively. Returning soon after towards the same place, I observed him plunge into the river while I was about forty yards distant from him; and when I had nearly reached the spot, he swam to land with a lily in his mouth, which he came and laid at my foot.—WILLIAM COWPER.

SECTION II.—GRAMMAR.

(3) Give the nominative and genitive singular, and nominative plural, with the definite article, of the German words for these :—*ham, example, adventure, alms, orange, broom, lightning, hermit, curtain, strawberry.*

(4) Mention five nouns which have different meanings, and which form their plurals differently, according to the difference of gender.

(5) Give the second person singular of present indicative, imperfect subjunctive; and the past participle and infinitive with *zu* of—*veranlassen, bemitleiden, übernehmen, umringen, umziehen.*

(6) Explain, and illustrate by an example, what is meant by the absolute accusative.

SECTION III.

(7) Form adjectives from the following nouns, and give their meanings :—*Frucht, Holz, Fehler, Macht, Thier, Herz, Arbeit.*

(8) Give the German, or English, words corresponding *etymologically* to *any ten* of *each* of the following two sets of words; adding, in each case, the actual meaning of the German word :—(*a*) *beam, blade, bottom, worth, ordeal, dapper, skirt, shank, scum, damp, thatch, fathom, ghost;* (*b*) *Mut, Urlaub, traurig, stumpf, Schüssel, Schmerz, Saum, Puppe, rächen, prahlen, holen, Herbst, Feind.*

SECTION IV.—LITERATURE AND COMMERCIAL CORRESPONDENCE.

(9) State what you know concerning the works of any *one* of the following writers :—*Hartmann von Aue, Wolfram von Eschenbach, Hans Sachs, Gottsched, Bodmer, Klopstock, Herder, Uhland, Jean Paul, Körner, Scheffel, Freytag.*

(10) Translate into German :—

As a first transaction I have shipped to your address, on board the *Flora*, Captain William Smith, five barrels of cod-liver oil, of which please find Bill of Lading herewith. Be good enough to apply yourself to the sale of these goods immediately on their arrival, and to forward me account-sales thereof in due course.

Arithmetic.

(1) Five guns are fired at 12 noon on Monday, and they are fired at intervals thereafter of 4, 9, 10, 15, 18, 20 and 21 minutes respectively. At what time will they first again be fired at the same instant?

(2) Find the value of 8·4549 of $\frac{\cdot 69}{\cdot 627}$ of $\frac{4}{12}$ of £418.

Multiply ·387592 by 23·6247869 correct to six places of decimals.

(3) Taking a metre = 39·37 inches, find without unnecessary working the number of square centimetres in a square foot, neglecting fractions of a square centimetre.

A rectangular vessel measures 4·25 metres by 35 decimetres by 48 centimetres. How many litres of liquid will it contain, and what is the weight of the liquid when its specific gravity is 1·850?

(4) What sum paid now would exactly discharge a debt of £1,083 10s. 11d. due $4\frac{1}{8}$ years hence if simple interest be reckoned at $5\frac{1}{4}$ per cent. per ann.?

If the creditor were to agree to cancel the debt on receipt of a bill payable 4 years hence, for what amount should it be

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drawn if the rate of interest be at the same time reduced to 5 per cent.?

(5) A lends £384 12s. 6d. at compound interest for 2 years at 4 per cent. per ann., the interest to accrue annually; B lends an equal sum at compound interest for the same time also at 4 per cent per ann., the interest to accrue half-yearly. Find, to the nearest penny, the difference between the amounts at the end of the time.

(6) What alteration should I make in my annual income by selling out my holding of £3,930 of $2\frac{3}{4}$ per cent. stock at $100\frac{3}{4}$, and investing the proceeds in $2\frac{1}{2}$ per cent. stock at $81\frac{7}{8}$?

(7) A room measures 23 ft. by 19 ft. and is 10 ft. high. What would be the cost of papering the walls with paper 2 ft. broad at $4\frac{3}{4}$d. per yd.? On the floor a carpet is laid which leaves a border 2 ft. wide all round; this border is covered with floorcloth. Find the cost of the floorcloth at 3s. per sq. yd.

(8) A man who expected to sell goods at a gain of $33\frac{1}{3}$ per cent., found that he had to lower his price to £4 15s. $7\frac{1}{2}$d., and he then made only $27\frac{1}{2}$ per cent. of profit. How much less did he get for the goods than he expected?

(9) Find, *with as little work as possible*, the circulating decimal equal to $\frac{5}{19}$; and thereafter *write down* the decimal equal to $\frac{7}{19}$.

Without finding them, describe accurately the decimals equal to the fractions:— $\frac{7}{160}$, $\frac{10}{625}$, $\frac{11}{13}$, $\frac{18}{203}$.

(10) A cube contains 306 cub. ft. 707·129 cub. in., find the area of its surface.

Answers.

(1) At 9 a.m. on Tuesday. (2) £4,953 3s. $10\frac{1}{2}$d; 9·156778.
(3) 929 centim.; 7,140 litres; 13,209 kilo.
(4) £886 10s. 9d.; £1,063 16s. 11d. (5) 6s. 5d.
(6) The income would be increased by £12. 16s. 6d.
(7) £2 15s. 5d.; £2 10s. 8d. (8) 4s. $4\frac{1}{2}$d.
(9) ·263157894736842105, ·368421052631578947; terminating 5 places, terminating 3 places, pure repeater 6-figure period, mixed repeater 3 non-repeating figures followed by a 6-figure period.
(10) 272 sq. ft. 100·86 sq. in.

Algebra.

(1) Simplify (i.) $(a+b+c)\left(\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right)-\frac{(b+c)(c+a)(a+b)}{abc}$;

(ii.) $\left(b-\frac{x^2-ab}{b-a}\right)\left(a+\frac{x^2-ab}{b-a}\right)+\left(\frac{x^2-ab}{b-a}\right)^2$.

(2) Find the factors of—
(i.) $ab(c^2+d^2)+cd(a^2+b^2)$;
(ii.) $a^2(b+c)+b^2(c+a)+c^2(a+b)+2abc$.

(3) Solve (i.) $\frac{5x^2+x-3}{5x-4}=\frac{7x^2-3x-9}{7x-10}$;
(ii.) $axy=c(bx+ay)$;
$bxy=c(ax-by)$;
(iii.) $\sqrt{a+x}+\sqrt{a-x}=12a/5.\sqrt{a+x}$;
(iv.) $x+y+z=a^2/x=b^2/y=c^2/z$.

(4) Find the root of
(i.) $\frac{3}{2}+\sqrt{2}$, and of (ii.) $ab+4c^2-d^2+2\sqrt{4abc^2-abd^2}$.

(5) If $(a+b+c+d)(a-b+c+d)=(a-b+c-d)(a+b-c-d)$, prove $a:b=c:d$.

(6) The number of apples which can be obtained for a shilling is two more than the number of oranges which can be obtained for a shilling, and the price of seven oranges exceeds that of seven apples by a penny; find the prices of oranges and apples.

(7) Find the sum of n terms of an arithmetical progression, first term a and common difference b.

Find the sum to $2n$ terms of the series $\frac{n}{n}+\frac{n-1}{n}+\frac{n-2}{n}+\ldots$

(8) Find the sum to infinity of $1-\cdot1+\cdot01-$, &c., and to n terms of $1\frac{1}{2}+2\frac{1}{4}+3\frac{1}{8}+\ldots$

(9) Insert three harmonic means between $a+b$ and b.

Answers.

(1) (i.) 1.; (ii.) x^2. (2) (i.) $(ac+bd)(ad+bc)$; (ii.) $(a+b)(b+c)(c+a)$.

(3) (i.) 3; (ii.) $x=\frac{a^2+b^2}{a^2-b^2}.c, y=\frac{a^2+b^2}{2ab}.c.$; (iii.) $\frac{4a}{5}, \frac{3a}{5}$; (iv.) $x=a^2/\sqrt{a^2+b^2+c^2}$, &c.

(4) (i) $1+\frac{\sqrt{2}}{2}$; (ii.) $\sqrt{ab}+\sqrt{4c^2-d^2}$.

(6) Apples 7 for 6d., oranges a penny each. (7) 1.

(8) $\frac{10}{11}, \frac{n(n+1)}{2}-\left(\frac{1}{2}\right)^n+1$.

(9) $\frac{4b(a+b)}{a+4b}, \frac{2b(a+b)}{a+2b}, \frac{4b(a+b)}{3a+4b}$.

Geometry.

(1) Triangles on the same base and between the same parallels have equal areas. Bisect a triangle by a straight line drawn through a point in one of its sides.

(2) Divide a straight line into two parts so that the sum of the squares on the two parts may be a minimum. Indicate how this problem may be interpreted algebraically.

(3) A variable chord of a given circle passes through a fixed point: find the locus of the middle point of the chord. Examine the cases where the point is inside the circle, outside the circle, and on the circumference.

(4) Inscribe a circle in a given triangle. ABC is a triangle. D and E are points in AB and AC, or AB and AC produced. Prove that the vertex A and the centres of the circles inscribed in the triangles ABC, ADE are collinear.

(5) If AB, CD are two chords of a circle which intersect at E outside the circle, show that the rectangle AE·EB is equal to the rectangle CE·ED.

(6) If three straight lines be proportional, the rectangle contained by the extremes is equal to the square on the mean. From B, one of the vertices of the parallelogram ABCD a straight line is drawn, cutting the diagonal AC at E, CD at F, and AD produced at G. Prove GE·EF = BE².

(7) P and Q are two points on the same side of a given plane; find a point R in the plane which is such that PR+RQ is the least possible.

(8) A and B are two points on the circumference of a circle. Show how to find a point K such that KA : KB = 4 : 3.

SCOTCH LEAVING CERTIFICATE EXAMINATIONS, 1901.

Revision Test Papers.

Lower Grade.

The papers cover the whole of the syllabus in each of the following subjects.

Particulars as to reprints of the papers will be found on p. 151.

English Grammar and Literature.

(1) Write an essay on—
(i.) A walk in the country in spring time.
(ii.) Athletics—their use and abuse.

(2) Paraphrase:—

An Old Oak.

Time made thee *what* thou wast—*king* of the woods
And time hath made thee what thou art—a cave
For owls to roost in. Once thy spreading boughs
O'erhung the *champaign*; and the numerous flock
That *grazed* it stood beneath that ample cope
Uncrowded, yet safe sheltered from the storm.
No flock frequents thee now. Thou has outlived
Thy popularity, and art become
(Unless verse rescue thee awhile) a *thing*
Forgotten, *as* the *foliage* of thy youth.
Champaign = level field.

(3) Give the general analysis of the first six lines, and parse the words in italics.

(4) Define the following:—Case, inflection, accidence, phrase, mood, conjugation.

(5) Classify, with examples, words ending in—*ing*.

(6) Parse words in italics:—They trusted *each other*. *The* shorter, *the* better. How *do* you *do*? I do not like *being seen* here.

(7) Make sentences illustrating the following words as different parts of speech:—after, round, one, that.

(8) Distinguish between strong and weak verbs. Conjugate the following verbs and classify them as strong or weak:—bid, lie, help, cleave, am, sing, teach, dig.

(9) Make sentences illustrating the use of—confidant and

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confident, eminent and imminent, ordinance and ordnance, capitol and capital.

(10) Name eight of the best martial lyrics in the English language. Quote eight lines from any one of those you name.

(11) Give a brief sketch of the play or poem you have been studying during the session.

History.

(1) Write short notes on *three* of the following:—Danelagh, Witenagemot, Domesday Book, Constitutions of Clarendon, Treaty of Wedmore, Benevolences, Statute of Labourers, Pilgrimage of Grace, National Covenant, East India Company, Stamp Act, Corn Laws, Ballot Act, Tonnage and Poundage.

(2) What traces are now left in Britain of the Roman invasion?

(3) Name the French provinces possessed by Henry II., and state the right by which he held each. Give approximate dates when they were lost.

(4) Mention some of the reasons for regarding modern history as beginning with the Tudors.

(5) Give a detailed account of any *one* of the following:—The coming of the Danes; the causes and results of the Hundred Years' War; the Reformation in the reign of Henry VIII.; the Colonisation of Ulster; the effects of the Restoration of 1660 on the social and moral life of the people; the Factory Acts; the Rebellion of '15; Indian Mutiny.

(6) Sketch the history of the establishment of the English power in India, or, state the chief provisions of the Act of Union, 1707.

Geography.

(1) Draw a map of the county in which you live. Mark the position of its hills, rivers and towns, and name these. Name its chief products, and the chief occupations of its inhabitants.

(2) Give a short account of the rivers and mountains of Ireland.

(3) Describe the coast of England from Liverpool to Southampton. Name the seaports in order, with the principal trade of each.

(4) Give a short account of *either* India *or* Italy, under the heads of (i.) rivers, (ii.) climate, (iii.) vegetation, (iv.) minerals, (v.) government.

(5) Name and briefly describe the British Possessions in the West Indies.

(6) Name the countries bordering on the Baltic Sea. Give the chief ports of each country, and say in what their trade consists.

(7) State exactly where the following places are situated, and what each is noted for—Windsor, Pekin, Aboukir Bay, Piræus, Corunna, St. Helena, Plassey, Mafeking, Lexington, Panama.

(8) Give some account of the North Atlantic Ocean currents and their effects.

(9) State briefly what you understand by the following terms—cañon, doldrums, llanos, typhoon, glacier, atoll, geyser, latitude, mistral, watershed.

(10) Select *five* of the following towns, and mention the reasons for their commercial importance—Lyons, Antwerp, Birmingham, Hamburg, Hongkong, Vancouver, New Orleans, Pittsburg, Rio de Janeiro, Barcelona.

(11) What countries supply Great Britain with wheat, cotton, wool, tea, rice, wine, coffee, jute? From what ports are these sent to this country?

(12) Name the language or languages spoken in each of the following countries—Scotland, Holland, Switzerland, Cape Colony, Quebec Province, Denmark.

Latin.

(1) Translate into Latin:—

Philip made great efforts at this time to detach the Flemings from the English alliance, and so far succeeded that the burgomasters of the great towns invited the young Count, whose father had fallen at Creci, to come and rule over them, being then in his fifteenth year. But Edward sent envoys, who pointed out to the Flemings the paramount importance of keeping on good terms with the people which commanded the supply of the produce on which their industry depended, and persuaded them to acquiesce in a proposal for a marriage between the Count of Flanders and an English princess. Upon the Count's indignant refusal to be united to "the daughter of the man who had killed his father" (for his father fell at Creci), his subjects seized him, and kept him under strict surveillance, till at last he gave them a promise that he would do as they required.—Warburton's "History of Edward III."

(2) Translate into English:—

(*a*) Haec enim ipsa sunt honorabilia, quae videntur levia atque communia, salutari, appeti, decedi, adsurgi, deduci, reduci, consuli, quae et apud nos et in aliis civitatibus ut quaeque optime morata est, ita diligentissime observantur. Lysandrum Lacedaemonium, cuius modo feci mentionem, dicere aiunt solitum Lacedaemonem esse honestissimum domicilium senectutis: nusquam enim tantum tribuitur aetati, nusquam est senectus honoratior. Quin etiam memoriae proditum est, cum Athenis ludis quidam in theatrum grandis natu venisset, magno consessu locum nusquam ei datum a suis civibus, cum autem ad Lacedaemonios accessisset, qui, legati cum essent, certo in loco consederant, consurrexisse omnes illi dicuntur et senem sessum recepisse.—Cicero, "De Senectute," § 63.

(*b*) Iamque pedem referens casus evaserat omnes,
redditaque Eurydice superas veniebat ad auras
pone sequens (namque hanc dederat Proserpina legem),
cum subita incautum dementia cepit amantem,
ignoscenda quidem, scirent si ignoscere manes:
restitit, Eurydicenque suam iam luce sub ipsa
immemor heu, victusque animi respexit. ibi omnis
effusus labor, atque immitis rapta tyranni
foedera, terque fragor stagnis auditus Avernis.—
Vergil, "Georgics," iv., 485.

(3) Translate into English:—

(*a*) I cannot but think that the longer we live the wiser we become.

(*b*) The boy was persuaded not to return home from the country till his father arrived.

(*c*) The general said he was persuaded that his troops would have been defeated if he had joined battle at once.

(4) (*a*) Conjugate the verbs—occīdo, occĭdo; meto, metior, mentior; dīlĭgo, delĕgo, delĭgo (bis); vinco, vincio, vivo.

(*b*) Give nom., gen., gender and meaning of—pectus, pecten, pecus (bis); gener, genu, genus, gena; nex, nox, nux; mas, mos, mus.

(*c*) Distinguish cānis, cănis (bis); sēcuris, sĕcuris; fides, fīdes (bis); lātus (bis), lătus.

(5) Describe the Roman method of storming a town, giving the Latin names of the various siege-works employed, and the Latin phrases which denote the operations.

French.

(1) Translate into English:—

(*a*) En 486, Clovis prit Soissons après avoir remporté une victoire complète sur Syagrius, général romain. Clovis avait ordonné le pillage de la ville et de son territoire; mais ayant voulu qu'on rendit à l'évêque un vase d'or qui faisait la richesse de l'église, les soldats qui l'avaient pris, intéressés à le conserver, murmurèrent contre cette restitution; l'un d'eux osa même s'approcher du vase et le fendre d'un coup de hache, en disant: "S'il tombe dans le lot de Clovis, il l'aura." Le roi n'oublia pas ce trait d'audace, et ne pouvant le punir sur-le-champ, parce que le partage était de droit, un an après, dans une revue, il reprocha à ce même soldat sa négligence dans l'entretien de son armure, lui arracha sa hache, la jeta par terre, et tandis que le soldat se baissait pour la ramasser, il lui fendit la tête en s'écriant: "C'est ainsi que tu as frappé le vase que je te demandais à Soissons!"—Malte-Brun.

(*b*) Sois-moi fidèle, ô pauvre habit que j'aime!
Ensemble nous devenons vieux.
Depuis dix ans je te brosse moi-même,
Et Socrate n'eût pas fait mieux.
Quand le sort à ta mince étoffe
Livrerait de nouveaux combats,
Imite-moi, résiste en philosophe;
Mon vieil ami, ne nous séparons pas.—Béranger.

(2) Translate into French:—

It was winter and it was very cold, and Willie was lying ill in bed. He had been ill for many weeks, but was now getting better. The doctor said that he would soon be able to get out of bed, but he was not to go out for a long time. Willie was very sorry when he heard this, and could hardly keep from (*s'empêcher de*) crying. He wanted to look at the shop windows

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filled with Christmas presents, and to see them all lit up at night. But Willie's sister Maggie did all she could to cheer him. She went out to see the shop windows every afternoon when she came home from school, and she told Willie all about them.—"Royal Crown Reader."

(3) You have been staying at a farm (*une ferme*). Write, in French, a short letter to a friend, telling him what you did and what you saw there.

(4) Give the first persons singular and plural of the present indicative, and the past participle, of the verbs—*aller, saisir, mourir, craindre, rire, suffire, dire, connaître, vivre, pouvoir.*

(5) Translate into French:—He will come on Tuesday.—He comes on Thursdays.—King Francis the Second died young.—Do you like coffee?—Will you take coffee?—I take no coffee.

(6) Summarise briefly any French play or story which you have read, and tell what you know of its author.

Or—

Form short sentences in French to show the proper use of the expressions:—*le marché, la vente, la facture, les échantillons, le commis-voyageur, le 15 courant, les actions, les actionnaires, une succursale, un commanditaire.*

German.

Section I.

(1) Translate into English:—

Ein Jäger wandelte mit ſeinem Knaben auf dem Felde, und es floß ein tiefer Bach zwiſchen beiden. Da wollte der Knabe zu ſeinem Vater hinüber, aber er vermocht' es nicht. Denn der Bach war ſehr breit. Sogleich ſchnitt er ſich einen Aſt aus dem Gebüſch, ſetzte den Stab in das Bächlein, lehnte ſich keck darauf und gab ſich einen gewaltigen Schwung. Aber ſiehe! es war der Aſt eines Fliederbaumes (elder tree), und indem der Knabe über dem Bache ſchwebte, brach der Stamm mitten entzwei, und der Knabe that einen tiefen Fall in das Waſſer, und die Wellen brauſeten und ſchlugen über ihn zuſammen.

Dieſes ſah ein Hirt von ferne und lief hinzu, und er erhob ein Geſchrei. Aber der Knabe blies das Waſſer von ſich und ſchwamm lachend ans Ufer. Da ſprach der Hirt zu dem Jäger: „Ihr ſcheint, Euren Sohn manches wohl gelehrt zu haben, aber eins habt Ihr vergeſſen. Warum habt Ihr ihn nicht auch gewöhnt, das Innere zu erforſchen bevor er dem Zutrauen ſein Herz öffnet? Hätt' er das weiche Mark inwendig geprüft, er würde der täuſchenden Rinde nicht getraut haben."

„Freund," erwiederte der Jäger, „ich habe ſein Auge geſchärft und ſeine Kraft geübt, und ſo kann ich ihn der Erfahrung vertrauen. Das Mißtrauen mag die Zeit ihn lehren. Aber er wird auch in der Verſuchung aufrecht beharren, denn ſein Aug' iſt hell und ſeine Kraft geübt."

F. A. Krummacher.—(Parabeln.)

(2) Translate into German:—

A widow once came to Frederick the Great with the request that he should discharge (*freigeben*) one of her two sons, who were in the army. The King promised her that before the autumn he would allow one of them to return home. But the woman was not satisfied with the promise. "It would surely be better," said she, "if you gave me that in writing; there is a saying (use, *heissen*) amongst us, 'Great people have short memories.'" The woman's outspokenness (*Freimütigkeit*) pleased the King, and smiling he said, "Come again to-morrow morning, and fetch the note" (say, *writing*). The woman still hesitated. "Well," asked the king, "won't you believe me?" "Yes," said the woman, "but you don't yet know my sons' name or the regiment in which they are serving (use, *stehen*). How can you discharge one of them if you do not know what he is called or where he is?" "You are quite right," answered Frederick, "I had forgotten that." He got *her* (*omit*) to tell him her sons' names and regiment, wrote everything down, read it out to her, and then inquired, "Is it all right now?" "Yes, your Majesty, but don't lose the bit of paper."

Section II.

(3) Give the nominative and genitive singular and the nominative plural, with the definite article, of the German for the following words:—*giant, hero, empire, peasant, body, cathedral, belief, badger, painter, leaf.*

(4) Decline fully the German for *strong wine, his own room, which deep hole*, and the personal pronouns *he, she.*

(5) Compare and translate the following adjectives:—*hoch, stark, nah, tapfer, eitel, stolz, viel, alt, träge*; and give the German for—*He is more extravagant than liberal; his house is as large again as ours.*

(6) Write out (giving, in the second person singular, only the *familiar* form; and in the second plural both the *familiar* and the *polite* form):—

(*a*) The present and the imperfect indicative of *mögen, dürfen, laufen.*

(*b*) The perfect indicative of—*einschlafen*, and *sich schmeicheln.*

(*c*) The perfect indicative and perfect subjunctive of the verb *to be praised.*

(7) Give—

(*a*) The first person imperfect indicative active and the past participle of—*müssen, vermögen, reissen, reisen, hauen.*

(*b*) The second person singular present indicative, and imperative, of—*sehen, heben, brechen, nehmen, tragen.*

Section III.

(8) State, and illustrate by examples, the various ways in which masculine monosyllabic nouns may form their plural.

(9) What peculiarities are there in the spelling of verbs in *—eln, —den*, and *—sen*?

(10) Explain the difference between the two forms of the superlative of adjectives.

(11) Name two historical works by Schiller, and two plays by Goethe.

(12) Who wrote "Die Lorelei," "Der Gute Kamerad," "Hermann und Dorothea," "Das Lied von der Glocke," "Der Trompeter von Säkkingen"?

Arithmetic.

(1) Subtract twelve millions, eight hundred and ninety-nine thousand, six hundred and ninety-four from twenty-three millions, eight hundred thousand, four hundred and three; and write the remainder in words.

Multiply 15 cwt. 2 qr. 14 oz. by 761.

(2) Find, *by practice if possible*, the value of 19 tons 6 cwt. 2 qr. 14 lb. at £3 13s. 4d. per ton.

Divide 2·94596405 by 1357·9.

(3) Resolve into their prime factors, 97020 and 514250. Write down in factors their G.C.M. and L.C.M.

What is the smallest number by which 97020 must be multiplied in order that the product may be a perfect square?

(4) A bankrupt's estate realises £1,270 0s. 10d., and is sufficient to pay 13s. 9d. in the £. What is the amount of his debts, and how much does a creditor lose to whom he owes £84 2s. 8d.?

(5) Find the simple interest on £160 0s. 7½d. for 7¼ yr. at 3⅓ per cent. per ann.

(6) Simplify:— $\dfrac{10\frac{1}{5}-2\frac{3}{7} \text{ of } 2\frac{5}{8}}{(12\frac{1}{5}-4\frac{3}{7}) \text{ of } 2\frac{5}{8}} \div \dfrac{1}{3+\dfrac{7}{12+\frac{3}{5}}}$.

Reduce to feet:— 2·03125 miles − 7·3215 fur.

(7) A grocer mixed 540 lb. of sugar which cost 3½d. a lb. with 360 lb. which cost 2¼d. a lb. At what price per lb. should he sell the mixture to make a profit of 25 per cent.?

(8) I sell 22 yd. of silk for £8 17s. 4½d. and gain 12½ per cent.; at what price per yard did I buy it, and what should I charge per yard to gain 25 per cent.?

(9) In a room which measures 18 ft. 3 in. by 15 ft. 8 in. a carpet is laid so as to leave uncovered a border 1½ ft. wide right round the room. Find, to the nearest penny, the cost of the carpet, at 3s. 7d. per square yard.

(10) A field measures 173·25 metres long and 64 metres broad. What is its area, in hectares, ares, and centiares? What is the rent of the field at 109 francs 37½ centimes per hectare?

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(11) Find the square root of 1121481.

An estate in the form of a perfect square has an area of 7,009 ac. 1 ro. 1 per. Find the length of its side in miles, furlongs and poles.

Answers.

(1) Ten millions, nine hundred thousand, seven hundred and nine; 590 tons 1 cwt. 1 qr. 15 lb. 14 oz.
(2) £70 17s. 7½d.; ·0021695.
(3) $2^2.3^2.5.7^2.11$, $2.5^3.11^2.17$; $2.5.11$, $2^2.3^2.5^3.7^2.11^2.17$; 55.
(4) £1,847 6s. 8d.; £26 5s. 10d. (5) £39 2s. 4½d.
(6) ⅔; 5892·81 ft. (7) 3⅜d. (8) 7s. 2d.; 8s. 11½d.
(9) £3 16s. 11d. (10) 1 ha. 10 a. 88 ca.; 121·275 fr.
11) 1059; 3 ml. 2 fur. 19 po.

Algebra.

(1) If $x=1$, $y=-2$ and $z=\frac{1}{3}$, find the values of
(i.) $(x-y)^2+(y-z)^2+(x-y)(y-z)+5z^2$;
(ii.) $2(2x-y)-6\left\{\left(2-\frac{y}{3}\right)-12\left(\frac{x}{3}-\frac{3x-4}{24}\right)\right\}$.

(2) Simplify:—
(i.) $(p-q)(x+p)(x+q)+(q-r)(x+q)(x+r)+(r-p)(x+p)(x+r)$.
(ii.) $(a+b)(a-b)(a^2+ab+b^2)(a^2-ab+b^2)$.

(3) Find the Highest Common Factor of $x^4-3x+20$ and $5x^4-3x^3+64$, and the Lowest Common Multiple of x^2-5x+6, x^2-4x+3 and x^2-3x+2.

(4) Simplify:—
(i.) $\dfrac{1}{x-\dfrac{x^2-1}{x+\dfrac{1}{x-1}}}$; (ii.) $\left(a-\dfrac{a^3-3a^2b}{a^2-b^2}\right)\left(b+\dfrac{ab-b^2}{a+3b}\right)\times\dfrac{a-b}{3a-b}$.

(5) Resolve into factors— (i.) $10x^2+79xy-8y^2$.
(ii.) $(a+b+c)^2-(a+b-c)^2$.

(6) Find the square root of $x^6+4x^5+2x^4-2x^3+5x^2-2x+1$.

(7) Solve (i.) $\dfrac{x-2}{x-4}-\dfrac{x-1}{x-3}=\dfrac{x-10}{x-8}-\dfrac{x-11}{x-9}$;
(ii.) $(x-a)(y+b)-(x+a)(y-b)=2a^2$;
$(x-b)(y+a)-(x+b)(y-a)=2b^2$;
(iii.) $7x+11y-68=9x-4y-33=0$.

(8) By travelling 2 miles an hour faster I can perform a certain journey in half an hour less; by travelling 2 miles an hour slower it would take one hour longer. What was the length of the journey?

(9) If $x^2=x+1$, prove $x^5=5x+3$.

Answers.

(1) (i.) 9; (ii.) 19. (2) (i.) $p^2q-pq^2+q^2r-qr^2+r^2p-rp^2$. (ii.) a^6-b^6
(3) x^2-3x+4; $(x-1)(x-2)(x-3)$.
(4) (i.) $\dfrac{x^2-x+1}{2x-1}$; (ii.) $\dfrac{2ab^2}{a+3b}$. (5) (i.) $(10x-y)(x+8y)$; (ii.) $4(a+b)c$.
(6) x^3+2x^2-x+1.
(7) (i.) 6; (ii.) $x=-\dfrac{ab}{a+b}$, $y=-\dfrac{a^2+ab+b^2}{a+b}$;
(iii.) $x=5$, $y=3$. (8) 12 miles.

Geometry.

(1) Classify triangles (*a*) with reference to their sides, (*b*) with reference to their angles. Show that every triangle must have at least two acute angles.

(2) Prove that only one perpendicular can be drawn from a point to a straight line, and show that this perpendicular is the shortest distance from the point to the line.

(3) ABC is a triangle. BA is produced to D, and the exterior angle CAD is bisected by AE. If AE be parallel to BC, prove that ABC is isosceles.

(4) The complements of the parallelograms about the diagonal of any parallelogram are equal.

Each of the parallelograms about the diagonal of a rhombus is a rhombus.

(5) Divide a given straight line into two parts so that the rectangle contained by the whole line and one of the parts may be equal to the square on the other part.

Show that there may be two points of division.

(6) Equal chords of a circle are equi-distant from the centre.

Two parallel chords in a circle whose diameter is 10 inches are 8 inches and 6 inches long. Find the distance between them.

(7) From a given point draw a tangent to a circle. Consider the two possible cases, and show that one is a particular case of the other.

(8) The angle in a semicircle is a right angle. The middle point of the hypotenuse of a right-angled triangle is equidistant from the three vertices.

(9) From D and E the mid-points of AB and AC sides of the triangle ABC perpendiculars are drawn which intersect at F. Show that the triangle FBC is isosceles..

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Mathematical Reform.

I WAS interested by your reference in the last number of your paper to my letter in *Nature* of February 14th. You might perhaps have gone on to ask whether "any good thing" can come out of the Public Schools as regards educational reform. We are, as I have said, very mediæval in our way, and an enormous amount still remains to be done, but we have made, and I hope still are making, some efforts to bring ourselves up to date, and would ask you, therefore, to "come and see."

For myself, I have always been on the side of rational reform, but I have always felt, when I have spoken about the matter, that I have been crying aloud in the wilderness unheeded. A further idea, which no doubt I shall find a later opportunity of enlarging upon somewhere or other, is that topographical, surveying, and even tactical, classes ought to be started for many of the older boys in our schools, and not only for those who are about to go into the Service. I would not leave these subjects to be taught only by the crammers. In this way, too, mathematical training might be made much more of a reality to the ordinary boy.

Let us hope we shall eventually see the old hugger-mugger system, the inane imbecilities of so-called elegant versification for boys, unscholarly as well as scholarly—and to the latter class I have nothing to say—swept away, and a promise of better things appear in our scheme of modern education.

G. H. J. HURST.

Eton College, Windsor,
March 7th, 1901.

Professor Armstrong and the Teaching of Science.

MY attention has been directed to a paper by Prof. Armstrong in the *London Technical Education Gazette*, in which he takes exception to some parts of a Science Syllabus which I recently (January, 1901) contributed to THE SCHOOL WORLD. His chief objections are as follows:—

(1) The course is too slow.
(2) Nature Study is an unsuitable subject for young boys.
(3) Weighing is not introduced sufficiently soon.

I will deal with these in order.

(1) If Prof. Armstrong had read my preliminary remarks, he would have seen that I state definitely

(*a*) That the age and previous training of the boys have to be taken into account.

(*b*) That a boy entering the school in a Form higher than the lowest must be able to pick up the thread, and work with boys who have entered the school at an earlier age, since he cannot be placed in a Form according to his attainments in Science alone.

(*c*) That the previous training in science of most new boys counts for little or nothing.

To this statement I would add that comparatively few boys

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enter the school in the lowest Form. The great majority come in from the elementary schools at the age of 12-14. Hence what I have termed the "third year" is really the first year so far as they are concerned. This is the case in most schools of this type, and is a standing difficulty to teachers of every subject. I omitted to mention it, as I considered it to be a fact familiar to all who are engaged in secondary education.

Prof. Armstrong, by a curious interpretation of what I actually wrote, accuses me of a belief that children cannot reason. His belief is "that we simply do not know what young people are capable of, and that we must not allow ourselves to be hampered by preconceived notions." After expressing his agreement with Prof. Perry "that a boy of 13½ ought to be far advanced in the calculus," he proceeds to advise an audience of teachers as to a method of obtaining a knowledge of what children can do: "Consult the works of Captain Marryat as to what children can do, for his stories are not entirely the work of his imagination, but based on solid fact." Is this the "heuristic method" of child study?

(2) "The value of Nature Study as a preliminary subject is much exaggerated. It is important that there should be no misunderstanding on this point." Evidently Prof. Armstrong speaks here from experience; otherwise he would not be so positive, but one cannot help comparing his experience with that of Prof. Miall in England, and that of Prof. Jackman in America. If he would again refer to my preliminary remarks, he would see that I mention that the time spent on Science in a secondary school is short, and that therefore the subject must be related to other branches, especially drawing, mathematics and geography. Nature Study lends itself admirably to painting and designing. It serves as an introduction to geography, and affords concrete examples in arithmetic. Would Prof. Armstrong prefer to see the balance rather than a plant form used as the basis of a design? And will he, as a member of the Consultative Committee, urge the Board of Education to withdraw their circular encouraging Nature Study in primary schools?

(3) Prof. Armstrong advocates the use of the balance "from the infant in arms and kindergarten stages upwards." He would like Kipling to write "a song with a refrain of 'Weigh, weigh, weigh!' which could be hummed to and sung by girls during their science lesson." I am willing to admit with Prof. Armstrong that weighing is of great importance, and that it ought to be introduced as soon as it conveniently can. For the purpose of connecting measurements with arithmetic and geometry, as my colleagues and I have been attempting to do, we find that the measurement of lines and angles is of greater importance. For the purpose of teaching approximation methods in arithmetic we have found that measurements of length, area and volume are at least as well adapted as measurements of weight.

With Prof. Armstrong's remark that, "if people learn to weigh things, they will perhaps in time learn to weigh opinions," I totally disagree. When he speaks on the subject of Chemistry, I am prepared to listen with due respect, but when he wanders into psychology I feel at liberty to have a different opinion.

A. Abbott.

Intermediate School, Cardiff,
March 11th, 1901.

A Method of Teaching Greatest Common Measure.

It is difficult to get boys to grasp what is really meant by Greatest Common Measure, or Highest Common Factor, and they fail to see when it is necessary to make use of them in working problems. Perhaps the following method of teaching G.C.M. may be found useful. After a few preliminary remarks and questions as to what a factor or measure of a number is, there should be no difficulty in eliciting the definition that a measure or factor of a number is any number that will go into that number exactly. Now write on the blackboard the number 36, placing underneath all the factors of 36 arranged in order. The factors should, of course, be elicited by questions. Incidentally it should be pointed out that the numbers go in pairs, viz., $1 \times 36 = 36$, $2 \times 18 = 36$, &c. Do the same with the number 48. The blackboard then appears thus:—

36	48
1	1
2	2
3	3
4	4
6	6
9	8
12	12
18	16
36	24
	48

Now write, between the two columns, numbers that are to be found in both columns, and discuss a suitable term to be applied to all such numbers. Fix finally on the word "common,"—illustrating its meaning, as when the word is applied to a space or field belonging to each individual of a town or village. The blackboard will now appear thus:—

36	Common Factors	48
1	1	1
2	2	2
3	3	3
4	4	4
6	6	6
9		8
12	12	12
18		16
36		24
		48

A question will then at once elicit the G.C.M. or H.C.F. The lesson must now be "rubbed in" by such questions as:—Why is 6 a factor of 48? Why is 6 a common factor of 48 and 36? Why is 12 the H.C.F. or G.C.M. of 48 and 36? Why is 8 *not* a common factor of 48 and 36? Why is 12 the greatest common factor of 48 and 36? What is the H.C.F. of 27 and 45? &c., &c.

The boys should then work out, exactly in the same way as on the blackboard, the G.C.M. of 108 and 72, and of 81 and 108.

The measures, common measures, and G.C.M. of 48, 72, 108, may then be worked on the blackboard, which would then present the appearance:

48	Common Measures of 48 and 72	72	Common Measures of 72 and 60	60
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
				5
6	6	6	6	6
8	8	8		
		9		
				10
12	12	12	12	12
				15
16				
		18		
				20
24	24	24		
				30
		36		
48				
				60
		72		

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Common Measures of 48, 72, 60 are 1, 2, 3, 4, 6, 12, and therefore the G.C.M. is 12.

H. H. HIGGS.

Aston Grammar School,
Birmingham.

What is the duty of an Assistant-Master?

YOUR correspondence columns have already assisted me on more than one occasion. I should like, with your permission, to raise a question of the highest importance to assistant-masters and mistresses, with a view to elucidating principles which may enable men in my position to act, should the necessity arise, in consonance with the canons of conduct which meet with the approval of all high-minded men and women.

I am painfully conscious of the fact that when a difference of opinion actually arises between a headmaster or a headmistress and an assistant, that what the man of science calls the personal equation introduces into the discussion a disturbing factor of a very grave kind. If, by means of this letter, I could raise a discussion in your paper, I am sure that it would be of the greatest benefit to many assistant-teachers who, actuated though they are by the best motives, feel, when the actual time for discussion comes, that it is mere presumption for them to oppose their views to those of the "head." The assistant is, I also know, apt to be weighted in the conflict with the personal consideration that he may jeopardise his future prospects by any appearance of independence, and, even at the cost of principle, he may, in order to keep his post, act in opposition to his real convictions.

The difficulties I have in mind are most likely to arise in connection with discipline, moral tone, the relative importance of work and games, and kindred problems. Is it necessary for an honest assistant, as soon as he finds himself in disagreement with the headmaster on questions of these kinds, to resign, or may he take refuge in the thought that the responsibility is the headmaster's, and that, despite his own opinions on the subject, he ought to carry out orders he believes to be wrong and support measures he believes to be inadequate? It is almost unnecessary to add that I recognise fully that the headmaster, as a rule, is even more sensitive of the honour of his school than any one of his assistants. But while human nature is what it is, the capitation fee is likely to cause a bias in the mind of the "head" which is absent from that of the assistant. I refrain from recording recent experiences of my own which, though they prompt this letter, have nothing to do with the important principle involved. I enclose my card, but prefer, if I may, to sign myself

H. J. H.

March 15th, 1901.

German Holiday Course at Kiel.

I HAVE been asked by the Secretary to the Kiel Holiday Course to undertake the distribution of their prospectus to the leading educational papers in England.

I attended last year's course and found it most helpful. It is arranged for German teachers—I was the only English-speaking student there—hence it has the advantage of taking the more advanced student straight to the centre of German thought and interests. Such lectures as those of Prof. Titius on "Ethics," Prof. Baumgarten on "Pestalozzi," Prof. Matthaei on the "Art of Engraving in Germany," as well as many others, were invaluable as a stimulus to intellect and sympathy.

Kiel is a most pleasant spot in the hot July weather, its harbour being a constant source of refreshment as well as of interest.

E. M. CUNNINGHAM.

Royal Holloway College, Egham,
March 18th.

The Social Position of Assistant-Masters.

I SHOULD be very much obliged if you would give space in your columns to a grumble concerning the same matter as that alluded to by your correspondent, "A Cambridge Man," in the last issue of THE SCHOOL WORLD, namely, the undeserved social inferiority attributed to assistant-masters. Surely, as your correspondent well remarks, we might be given an opportunity of proving ourselves to be desirable and worthy acquaintances. It would seem our ideas are never to be influenced by feminine society, our lives (dreary enough, some of them!) are rarely cheered and brightened by any of the thousand-and-one "little attentions" which cost nothing, yet are worth so much. For my own part, as a young member of the profession, I must confess to a feeling of utter disgust at the way in which the "mere assistant-master" is set aside, slighted, and sometimes even actually insulted, by those under whose roof he lives, and for whose good he spends his best energies. I fear my own case is but one of very many; but a few lines from me seemed a necessity, if only to cordially thank "A Cambridge Man" for his stout championship of the rights of all those who, like myself, are proud to sign themselves

SCHOOLMASTER.

Rules of Rhyme, Rhythm and Metre.

I SHOULD be very grateful if any reader of THE SCHOOL WORLD would be so kind as to suggest to me a small and inexpensive book which would help me in teaching the rules of Rhyme, Rhythm and Metre to an English Literature and Composition Class.

FLORENCE E. M. J. REES.

Liverpool College for Girls,
Huyton, near Liverpool,
March 15th.

PRIZE COMPETITIONS.

No. 13.—English Essays written to Skeleton Provided.

IT was announced in the March number (p. 120) that the result of this competition would, if possible, be given in the present issue. The large number of essays received has, however, made it impossible for the Examiner, in whose hands the award was placed, to examine thoroughly the essays in the few days which intervened between the last date for receiving entries and that of going to press. The names of the prize winners will be published in the May number, when we shall also print the four prize essays.

No. 14.—Answers to Test Papers in Geography.

For the best set of answers to any eight questions from *one* of the geography papers given on p. 152 and p. 155, but not from both, a prize of books to the published value of half-a-guinea, to be selected from the catalogues of Messrs. Macmillan & Co., Ltd., is offered. A second prize of books, to the value of five shillings, will be awarded for the next best set of answers to eight questions from either paper. There will thus be two prizes for each paper.

The competition is open to pupils of any age, irrespective of whether they are boys or girls, or in English, Welsh, Scottish or Irish schools. A coupon (p. v.) must be sent in with every separate paper or packet of papers. The competitor's name should be written upon each paper, which must also be endorsed

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by the teacher or other responsible person, certifying it to be the unaided work of the competitor.

Papers should be sent to The Editors, The School World, St. Martin's Street, London, W.C., on or before Saturday, April 13th. No papers posted after that date will be examined.

The result of the competition will be announced in the June number.

OUR CHESS COLUMN.

No. 27.

The interest taken in our monthly competitions is very small, judging by the number of papers sent in. It was an easy matter to annotate the game given in the February number, yet the competition was very unpopular. This month I offer a prize—a five-shilling book to be selected from Messrs. Macmillan's catalogues—to the sender of the best game, original or otherwise, of not more than 30 moves. Anyone can enter for this competition. Answers should be received on or before April 13th.

One of the games in our Inter-School Correspondence Tournament has been finished — Nonconformist Grammar School, Bishop's Stortford, having beaten Friends' School, Saffron Walden. Appended is the score :—

	White.	Black.
1.	P—K4.	1. P—K4.
2.	Kt—KB3.	2. Kt—QB3.
3.	Kt—QB3.	3. Kt—KB3.
4.	B—B4.	4. Kt x P.
5.	B x P (ch.).	5. K x B.
6.	Kt x Kt.	6. B—K2.
7.	P—Q3.	7. R—KB1.
8.	B—Kt5.	8. P—Q4.
9.	B x B.	9. Q x B.
10.	Kt (K4)—Kt5 (ch.).	10. K—Kt1.
11.	P—KR4.	11. Q—Kt5 (ch.).
12.	Kt—Q2.	12. Q x P.
13.	Q—R5.	13. Q x R (ch.).
14.	K—K2.	14. Kt—Q5 (ch.)
15.	K—K3.	15. Kt x P (ch.)
16.	K—K2	16. B—Kt5 (ch.).
17.	Q x B.	17. Q x R.
18.	Kt (Q2)—B3	18. P—K5.
19.	Kt—K6.	19. P x Kt.
20.	K—Q2.	20. Q—K8 (ch.).
21.	K x Kt.	21. Q x P (ch.).
22.	K—B3.	22. P—Q5.
23.	K—Kt3.	23. Q x P.
24.	Q—K4.	24. Q—K7.
25.	Q—Kt4.	25. Q x QP.
26.	K—Kt4	26. Q—B6 (ch.).
27.	K—R4.	27. P—Kt4 (ch.).
28.	K x P.	28. R—Kt1 (ch.).
29.	K—R6.	29. Q—R6 (mate).

This month I am giving a few hints which I find are useful to boys in end-games. It is by no means an uncommon occurrence for a player with a winning superiority to throw away his chances by stalemating his opponent. One very frequent case is that in which one of the players is left with King and Rook's Pawn against King. If the latter can succeed in getting in front of the Pawn on the Rook's file, the game is drawn ; again, if he can command the Bishop's file and confine the opposing King to the Rook's file, in front of the Pawn, he can only be stalemated. He must play from B1 to B2, and *vice versa*.

Two Knights cannot mate the lone King ; a Bishop and a Knight together can, but it is necessary to drive the King to a corner of the board commanded by the Bishop. Staunton, in his "Handbook," gives the following position :—Black K on KR1 ; White KB on K6, B on KB5, Kt on KKt5. (Remember that the B and K alone can drive the opponent to the side of the board.)

	White.	Black.
1.	Kt—B7 (ch.).	1. K—Kt1.
2.	B—K4.	2. K—B1.
3.	B—KR7.	3. K—K1.
4.	Kt—K5.	4. K—B1.
5.	Kt—Q7 (ch.).	5. K—K1.
6.	K—K6.	6. K—Q1.
7.	K—Q6.	7. K—K1.
8.	B—Kt6 (ch.).	8. K—Q1.
9.	Kt—QB5.	9. K—QB1.
10.	B—B7.	10. K—Q1.
11.	Kt—Kt7 (ch.)	11. K—QB1.
12.	K—B6.	12. K—QKt.
13.	K—Kt6	13. K—QB1.
14.	B—K6 (ch.).	14. K—QKt.
15.	Kt—B5.	15. K—QR1.
16.	B—Q7.	16. K—QKt1.
17.	Kt—QR6 (ch.).	17. K—QR1.
18.	B—B6 (mate).	

Mating with two Bishops is comparatively easy, as it is only necessary to prevent the King's crossing diagonals, and these can of course be commanded. Where you have King and Queen against King be careful lest you give stalemate. Force the King to a side of the board, and keep him there, bring up your own King opposite with one square between them, and then mate by moving the Q on to the R file. A similar process holds good in the case of a Rook. It sometimes happens that if a Pawn queens stalemate is given ; look out for this trap and choose a Rook instead. If you have a Rook against a Knight the game is drawn unless the King and Knight are in a corner of the board.

Mason, in "The Principles of Chess," gives some useful hints :—Two united Pawns, one on the sixth, and the other on the seventh rank, and not being compelled to move, defend themselves against the Queen.

Two united Pawns on the sixth rank, having the move, queen against (1) the Rook, (2) the Bishop, (3) the Knight.

A Rook Pawn and a Bishop will not win against the lone King, if the King can front the Pawn, and the latter does not queen on a square commanded by the Bishop.

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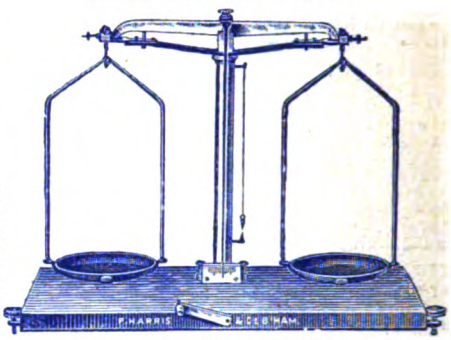

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By H. G. SEELEY, F.R.S.
Professor of Geology and Geography, King's College, London.

STUDY of pictures is no substitute for experience of fact, in knowledge of nature; and it is only by training the powers of seeing and thinking, which is termed observation, that we gain useful acquaintance with the surface of the earth. In experimental science the chemist and physicist have long had their laboratories as the only means of imparting a real knowledge of force and of matter. In observational science it has been generally recognised that neither physiology nor anatomy, zoology nor botany, can be taught without specimens and systematic observation in the laboratory and out of it. The geological and geographical examination of the earth calls for a similar real familiarity with its structure and appearance on the part of teacher and pupil.

The founders of geology and modern geographical science gained their knowledge direct from nature by walking over the country, and were so profoundly impressed with the need that the student should be brought face to face with nature, that University professors, after one or two lectures, took the men on excursions to see what rocks look like, and how they affect the surface appearance of the earth. But until the London Geological Field Class[1] was formed, there was no practical teaching in the neighbourhood of London of a systematic kind which was accessible to students, teachers, professional men, ladies and gentlemen alike, treating quarry and clay-pit, hill-range and river valley, as a laboratory from which we could learn the principles of intelligent enjoyment of the configuration of our country. As increased attention is now being given to out-door observations of nature, a short statement of the organisation and work of the class may be of interest.

The Field Class is a society of my old pupils. It came into existence not less from their desire to know practically the geological history of this part of England than from my desire to use the London district as a type of the geology of England, which might be made a means of reading the face of the earth wherever it presented interest to the student, or wherever it called for explanation from the teacher. But the class has always kept in touch with industries carried on in the localities visited, the treatment of problems in engineering shown in railway construction, the uses of local stone for church building and modern architecture, quarrying, lime-burning, making of whiting, portland cement, bricks and tiles, no less than matters of superficial and deep-seated water supply, and association of some deposits with conditions of public health and production of food.

But while avoiding a mere academic exposition of science, we have as little sought to gain a technical training in its applications; and perhaps the chief secret of the favour with which the class has been welcomed has been the fact that it has offered a means of explaining the modes of origin of the most beautiful scenery within easy access.

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[1] Information concerning the meetings, membership and publications of the London Geological Field Class, may be obtained from Mr. R. H. Bentley, the General Secretary, 43, Gloucester Road, Brownswood Park, N.

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examined in nature, they are found to be the fundamental conditions which govern everything which can be observed. They control the direction in which the geological deposits come to the surface and extend through the land; they determine the breadth of the rocks as a consequence of the angle at which they are all tilted. Thus, at the outset, we find great thicknesses of rock folded and broken, and displaced from their original positions as a part of a process which has brought the land as a whole into existence, and sunk the valleys which the sea now covers. The great problems of force irresistible which heaves up mountain chains can then be realised almost as well in the Weald as in some mountain chains. But no sooner is the crumpling of the rocks in such country evidenced than it becomes manifest that the surface has been levelled, planed down so that the newer strata have been removed from off the older beds, and it is worth going out to see how the work has been done, leaving the edges of the more durable strata approximately parallel to each other and of similar altitudes.

Before these geographical problems can be sufficiently understood, it is found convenient to see the strata, and consider their mineral structure and behaviour in the country as rock masses. So we go into pits and cuttings to learn what stratification means, and examine the materials of which a stratum is composed, as sandstone, clay, limestone or gravel, and discover the causes for a bed's relative durability, and notice dip, and strike, and outcrop, resulting from the origin of the strata, or from changes which rocks have undergone in yielding to the movements of the earth. The succession of the rocks formed in seas and estuaries, bed upon bed, is followed, and proved to maintain the same order in different places. So that Hastings sand, weald clay, lower greensand, gault, upper greensand, chalk, are terms which come to signify something very different in the field from anything which can be imagined from handling hand specimens, or even from reading everything which has ever been printed about those deposits.

Ample opportunity usually occurs for collecting fossils, and gives occasion for explaining the great facts of the succession of life on the earth, as well as the distinctive characteristics by which each deposit is identified. Even when fossils are few, it may be said with truth that the student carries away from the quarry a better idea of the distribution of the organic remains which lived when the stratum was accumulating in the locality examined, than could be gained from the study of specimens in a museum. Museums tell nothing of the relative abundance of specimens, and some fossils, like the twigs of timber in the London clay, are not suitable for preservation or exhibition, owing to their rapid decay.

The time available is too short for systematic examination of the fossils of every deposit, but in successive years the gaps are filled in down to examining the river gravels which yield the chipped palæolithic flint implements made by pre-historic Englishmen hard by the Thames.

Side by side with the examination of the geological history of a stratum, we consider the ways in which its configuration as a rock has been effected by frost, rain, wind, and rivers; and some excursions are always planned to illustrate the different types of valley, hill, hill-range, escarpment, and plateau, as they vary with the mineral nature of the geological deposits which contribute to form them, and modes of action of the denuding agents which brought each of them into existence. Nor does the class neglect the work of the sea on the coast. In sections on the north of Kent the mutability of geographical contours of the shore, which have been different in earlier years, has been seen in progress.

After the day's work of observation is over, and tea taken, I am usually able to give a summary of the facts seen, and to add further explanations than were possible in the field, concerning parallel conditions in other places, or to speak of rock structures or fossils which have aroused interest.

Rain has never caused an excursion to be intermitted, and wet or fine days spent with the London Geological Field Class have been delightful to the many who have shared with me these afternoons of learning and thinking while looking nature in the face.

We have watched with pleasure the growth in recent years of institutions similar to the Field Class, and the gradual substitution in the country of real knowledge of nature for the less perfect teaching formerly tolerated in geology and geography.

A little book recently published[1] contains an excellent record of what has been done in an annual school-outing in observing the relation of geological structure to surface configuration in the North Down district between Caterham and Godstone. The author has found a large amount of preparatory work desirable in dealing with boys, but with older students it is found that work actually done in the field requires no other explanation. It is likely to stimulate teachers to take their students to see the real geography in nature, which cannot be taught from books or in class rooms.

The best result of our efforts will always be to find old members of the Field Class securing recognition for its method of teaching as an instrument which can be used with advantage in all grades of national education, which is invaluable for students of all ages, as necessary in the village school as in the colleges of a University, if the open page of the Earth is to be read by this generation.

To some men it [field geology] is little more than another name for holiday making in the country. . . . To others it is the solace and delight of busy lives, furnishing them not only with bright intervals of escape to the country, but with materials for much profitable thought and study when the ordinary duties and cares of life confine them to their work in town. To other men, again it is itself the main occupation of life.—Sir A. Geikie.

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1 "The School Journey: a means of teaching Geography, Physiography, and Elementary Science." By Joseph H. Cowham, with additional journeys of Geo. G. Lewis and Thomas Crawshaw. London, Westminster School Book Depot, 1900.

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EDUCATIONAL ASPECTS OF RECENT ARCHAEOLOGICAL RESEARCH.

By F. E. THOMPSON, M.A.

II.—THE HOMERIC EPIC.

THE Homeric poems fall in the gap between the "Mycenaean" and the Hellenic period, looking backward to the past and forward to the future. Differences there are, easily explained by the somewhat later date of the poems, but the differences are nothing to the resemblances. The districts and cities of the Mycenaean and the Homeric age are the same; Mycenae is still the "golden" city, the treasures of Orchomenos are comparable with those of

FIG. 5.—Gold Cup from Mycenae, with Doves on the handles. See the description of the Cup of Nestor. Il. xi. 632.

Egyptian Thebes. The metal work is the same in motive and technique; the shield of Achilles, the breastplate of Agamemnon, the brooch once seen by Odysseus in Crete, the cup of Nestor, are paralleled by the scenes chased on the dagger-blades and the silver cup from Mycenae, the gold cup with doves on the handles from Mycenae (Fig. 5) and the embossed goblets of Vaphio. The palaces of Alcinous and Odysseus have the same general ground plan, and the same decorative schemes as those of Hissarlik, Tiryns and Mycenae. The weapons and chariots are essentially the same. Even the most serious discrepancy, burial in the Mycenaean, cremation in the Homeric age, implying, as the two systems undoubtedly do, a difference of religious belief, is accounted for by the discovery of the Dipylon cemetery at Athens (ninth and eighth centuries), where the two systems are seen to overlap. There is no violent breach between the Mycenaean and the Homeric civilisation. (See Frazer's "Pausanias," vol. iii., p. 154.)

Not that the poet describes actual cities or the actual circumstances of a recorded war. The burnt city of Hissarlik is not the Ilios of Homer. The creations of poetic imagination are woven on the fabric of tradition. Just as Arthur Hallam finely described the plays of Shakespeare as the tribute of the Renaissance to the Middle Ages, so we may say that the era of "golden Mycenae" and its unforgotten splendours inspired the greatest of the world's epics.

III.—HELLENIC GREECE

Much of the history of the earlier period is being re-written. The Hellenic tribes, probably in the course of centuries, overran Greece and peopled the islands. But the invasion was no war of extermination. The blending of old with new was most conspicuous in Attica, whose inhabitants boasted to be "children of the soil;" the subjection of the old to the new most complete in Dorian Laconia. These instances are significant as measuring the influence of the "Mycenaean" leaven. One result of the Hellenic irruption was an eastward movement of the older races with some of the new-comers to the north-western districts of Asia Minor (Aeolian) and the central seaboard (Ionian), to be followed later on by Dorian settlements in the south-western corner. The earlier settlers dispossessed the intruding Phoenicians and carried their "sub-Mycenaean" civilisation to the northern shores of the Euxine, and on its eastern coasts to the lands of the Colchi and the Moschi (the Mesech of Assyria and of the "Pilgrim"-Psalmist). In the seventh century they founded a city in Egypt, Naukratis, the "Sea Queen," a great centre of foreign trade, rediscovered a few years since by Mr. Flinders Petrie.

Our knowledge of the strictly classical period, from the sixth century onward, is constantly being corrected, supplemented, and enlarged by discoveries which touch on every phase of Greek life. The materials furnished by archaeology are so varied and so abundant that selection becomes a matter of great difficulty. A few of the more important things, however, must be noticed.

At Olympia, the centre of Pan-Hellenic life, we can again look upon Altis, temples, altars, treasuries, gymnasium, stadium with notches in the stone for the grip of the athlete's toe, reception hall for the distinguished guests and porticoes for the humbler visitors. The early votive offerings in bronze found in the Altis, like the small statuettes found in Cameiros and other sites in Rhodes, seem to fill up the gap between Mycenaean and archaic Greek art in some measure. In both cases a certain Oriental influence is visible. And though the bases for the statues are vacant, we can admire one authentic masterpiece, the Hermes of Praxiteles, with the same confidence in its genuineness as in that of the Ansidei Madonna of Rafaelle.

Protracted investigations of the Acropolis enable us to reconstruct its arrangements from primi-

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tive times to those of the Roman Emperors. To take one period only, that of the Peisistratids. After the retreat of Xerxes, the Athenians set about repairing the ruin caused by the Persians. We have no literary record of the work done, but excavation shows that, instead of carting away the *débris*, the workmen used it as rubble whereon to lay the terrace for the new monuments to be erected. In this substruction, "as in a museum," were embedded fragments of architecture and sculpture, vases, bronzes and other objects. Among these were found architectural sculptures belonging to the old temple of Athena or older Parthenon (whichever it is) between the Parthenon and the Erechtheum. The subjects are mostly taken from the struggles of Heracles with Hydra, Triton, Echidna and other monstrosities. In the quaintness and grotesqueness of an over-luxuriant art and mythology, Peisistratid Athens is seen to be under the spell of Western Asiatic (Ionian) influences.

Special interest attaches to the explorations at Delphi, the more than Hellenic centre of religion. Excavation in working upwards has exposed terraces, treasuries and the stadium high up on the mountain spur. Among the treasuries, that of the Athenians, built after Marathon, has been recovered, with sculptures pronounced to be the finest masterpieces of archaic art yet found; among the offerings the magnificent bronze charioteer, presented by Polyzalos, brother of Gelon and Hieron of Syracuse (478-472). The explorers had also the good fortune to come upon part of a Hymn to Apollo (not earlier than the third century), with musical notation in ordinary Greek letters, to be sung in unison to flute and lyre.

At Epidaurus, again, the Lourdes of ancient Greece, the interest is of a different nature. Here, in the precinct of Asklepios, with all its apparatus for the amusements as well as the treatment of the patients, as in a modern spa, were found inscriptions recording miracles of faith-healing. Here, also, is the theatre built by the younger Polykleitos (fourth century), famous as the most beautiful in Greece, in a wonderful state of preservation.

Megalopolis, the federal capital of the Arcadian league, founded after the overthrow of the Spartan supremacy at Leuktra, possesses the unique attraction of a new city designed for a special purpose. The Agora, the Theatre, the largest in Greece, and the Thersilion have been laid bare. The last-named, the Parliament House of the Ten Thousand deputies, was a covered chamber resembling a Persian hall of audience. The floor rose gradually from centre to circumference, and the internal pillars were so arranged as not to interfere with sight or sound when the audience was addressed by a Demosthenes.

Indeed, both the public and private life of the Greeks have been disclosed to us by archaeology with a minuteness hitherto unknown. The explorations at Olympia and on the Acropolis have made it clear that the history of Doric and Ionic temple-architecture must be rewritten. We have, unfortunately, no material evidence of the scenic arrangements of a fifth-century theatre, but the recent suggestion that the actors performed on a temporary wooden stage is rendered difficult of acceptance by the discovery of an inscription at Delos which identifies the *logeion* with the *proskenion*. Excavations at Athens show us what a main street looked like, no more than sixteen feet wide. From Delos we can reconstruct a middle-class Greek house, not, as has been generally supposed, with two courts like those at Pompeii or Rome, but with one only, in the corner of which was a recess to catch the winter sun, with one large room, smaller rooms and offices. Some masterpieces of Greek sculpture have been recovered, among them a series of sarcophagi at Sidon made for its princes by Greek artists, some of them Attic, dating from the early fifth to the late fourth century. These are now at Constantinople in unrivalled preservation, and rank with the finest works of the sculptor's art. To inscriptions we owe most of our knowledge of some departments of Greek life unrecorded or scantily recorded in literature, such as treaties, temple administrations, religious guilds and of the Athenian ephebic system, the "ancient equivalent of the university life of our day." Inscriptions also illustrate the text of the historian, that, for instance, in which, after the disaster at Aegospotami, Athens in her darkest hours with pathetic pride confers on the loyal Samians the perilous pride of being Athenians ("Resolved by Council and People that the Samians be Athenians"). And archaeology has recovered literature itself, the poems of Bacchylides and the "Constitution" of Aristotle.

Lastly, vases have added enormously to our knowledge of Greek art, mythology, and life generally. The Acropolis excavations prove that the finest period of vase-painting begins before 480 and precedes the finest period of sculpture. From the Greek writings which have survived, we know comparatively little of the multiform mythology described by the vase-painters, while hand in hand with this increase in knowledge has gone the more reasonable and scientific method of comparative mythology, and of the relation of myth to ritual, it being evident that mythology is often the attempt to explain the forgotten significance of ancient ritual. Vases set before the eye the scenes narrated by Aristophanes, Xenophon, and Plato: "We can see the market-place and the palaestra, the women at their toilet or their household employment, the boys at school and at play, the banquet and the symposium, while the white lecythi painted for the tomb show us how the Greek thought of death, and symbolise the affection and tribute offered by the mourners and their departed friends . . . . The paintings of Polygnotus and Zeuxis are lost, but vases at least give us an idea of the development of that art." (E. A. Gardner.)

The following books and papers may be consulted. For "Mycenaean" Greece, Schuchardt's "Schliemann's Excavations," translated by Sellers. "The Mycenaean Age," by Dr. Chrestos Tsountas and J. Irving Manatt. Frazer's "Pausanias," vol. iii., p. 144, gives an excellent summary. Papers by D. Hogarth in "Authority and Archæology," in the *Contemporary*

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Review, December, 1900, and the *Monthly Review*, January, 1901. An account of Mr. A. Evans' Explorations at Knossos is given in the *Journal of Hellenic Studies* for 1900, but a much fuller account has appeared in the *Annual of the British School at Athens*, 1899-1900; a very interesting short article by Mr. A. Evans appears in the March number of the *Monthly Review*. For Greek archaeology generally Frazer's "Pausanias," and the annual volumes of the *Journal of Hellenic Studies*.[1] The Sidonian Sarcophagi are figured in the magnificent volume by Hamdy Bey and Théodore Reinach, "Une Necropole Royale à Sidon," Paris, 1892 (in the Students' Room of the British Museum). Nearly all the above are profusely illustrated.

ENGLISH HISTORY, 1688-1832.

FOREIGN AFFAIRS.

By C. S. FEARENSIDE, M.A.(Oxon.)

"DRY" is the epithet which the headmaster of a large secondary school once applied to this period; and there can be little doubt that his opinion is shared by many of his professional brethren—and perhaps also by their charges. Why? Various reasons might be assigned for this opinion: for instance, that the period is lacking in the picturesque and heroic elements which most appeal to the youthful mind; that the period is treated, to use Prof. Oman's words, "in unmanageable bulk" in most of our text-books; and that both the international and the constitutional history are so complicated that it is exceptionally difficult to make them clear and interesting. The first of these accusations may be briefly dismissed with "the lie direct": anybody who finds a period studded with the exploits of Anson, Bruce, Clive, Cook, Coote, Dampier, Hastings, Hawke, Marlborough, Mungo Park, Nelson, Parry, Peterborough, Phillips, Rodney, Sarsfield, Washington, Wellington, Wolfe and the "Young Pretender" lacking in "picturesque and heroic elements" must be mighty hard to please. But there is a considerable amount of truth in the other two accusations; and the main object of this article is to furnish a clue to one particular department of the labyrinth of facts. Other clues to other departments will be found in a little book recently published which provides teachers (to my mind effectively) with much the same kind of help as Mr. McNair and myself have attempted to supply for earlier periods in various numbers of THE SCHOOL WORLD—viz., Miss M. A. Rolleston's "Note Book of English History" (Davis and Moughton, 3s.).

The particular department which I have been advised to consider is that of foreign affairs during this period—which is that prescribed for the Cambridge Local Examinations next December, and includes one of the alternative periods for the Oxford Local Examinations this summer (viz., 1715-1820). And I propose to consider it not simply from the standpoint of pure history, but also with reference to the standard of the examination (as revealed by past papers), and to the faults which I have observed and analysed in papers done by boys under examination conditions. Now there are two features in our text-books which, naturally enough, frighten the teacher and learner of the period in this particular aspect: the affairs of foreign countries are often treated at great length—especially in connection with Frederick the Great and the French Revolution—and there is an immense number of battles mentioned. If one were to collect all the names of battles mentioned in half-a-dozen of our text-books most commonly used for "the Locals," the total would approach, if it did not exceed, two hundred. This number, like Katisha, is "simply appalling." But an inspection of the papers gives immediate relief: in the last twenty years the Cambridge Local Examiners in all grades have not expressed curiosity about more than forty battles and sieges. Nor have the examiners troubled their candidates about any aspect of European history which does not directly affect British history—the nearest approach to an exception being an inquiry about the Moscow Expedition. So far as direct questions are concerned, the Cambridge authorities, at any rate, cannot be accused of trespassing into Universal History or making an undue strain on the memories of their clients.

If we survey British foreign policy during this period *from a British point of view*, we find a considerable variety of motives, fields of action, and allies. But with rare exceptions we find our country—under the successive names of "England," "Great Britain," and "Great Britain and Ireland"—opposed to France and Spain, and allied with the United Netherlands and Austria. And if we once grasp the reasons both for the general rule and for the exceptions, we shall have done much towards obtaining a clear and true idea of British international relations during this period, and towards seeing that many apparently petty and isolated details have a real connection with one another and have a real bearing on the present position of our country. These terrible "dry details" are often "interesting" in the sense of "entertaining," when taken as mere episodes, but when grouped together and viewed in their interrelations they will be also "interesting" in the higher sense as concerning our "interests" as British citizens. Now all this is brought out in a book which, though handicapped by the lack of an index and of a practical bibliography, is both eminently readable and quite indispensable to the intelligent teacher—viz., the late Sir John Seeley's "Expansion of England" (Macmillan, 5s.).

From this point of view we may mark off the period into seven war periods and seven peace periods, alternating with one another:

I.—(*a*) WAR OF THE ENGLISH SUCCESSION, "War of the Grand Alliance," or "King William's War," 1688-1697.

(*b*) Breathing Space, 1697-1700.

II.—(*a*) WAR OF THE SPANISH SUCCESSION, or "Queen Anne's War," 1701-1713; a bundle of wars having various

[1] A paper by Prof. E. A. Gardner in "Authority and Archæology." "History of Greece," by J. B. Bury, may also be mentioned. Since this paper was written, photographs have been sent to the Hellenic Society of the Cerigo find, among the objects being a bronze worthy to take rank with the Praxitelean Hermes.

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motives, of which interest in the Spanish Succession was one, and, so far as England was concerned, a minor one.

(*b*) The Walpolean Peace, 1714-1740; not quite so peaceful as it looks.

III.—(*a*) The Wars of 1740-1748 (or "King George's War"), often misleadingly called the "War of the Austrian Succession." There are two important points about this war which seem often to escape notice: (1) We were at war with Spain before the question of the Austrian Succession led to any war. (2) The wars directly concerning the Austrian Succession were over before Great Britain came to open war with France.

(*b*) The Pelham Peace, 1748-1756, marked by the Reformation of the Calendar at home and the great Dupleix-Clive struggle between the British and French Companies in India.

IV.—(*a*) The Seven Years' War, 1756-1763, in which Pitt "conquered America on the fields of Germany."

(*b*) The Georgian Peace, 1763-1775, marked by George III.'s varied and persistent efforts to "be a king," which, among other things, led to—

V.—(*a*) The War of the American Revolution, 1775-1783, in the last five years of which the Bourbon Powers took up arms against Great Britain to avenge their losses in the previous war.

(*b*) The Pittite Peace, 1783-1793, marked by economic reforms.

VI.—(*a*) The Revolutionary Wars, 1793-1802, in which Great Britain had several intermittent allies and enemies.

(*b*) The Sixty Weeks' Peace, 1802-1803.

VII.—(*a*) The Napoleonic Wars, 1803-1815, marked by a short break in 1814-5, and by the Second Anglo-American War.

(*b*) The Liverpool Peace, 1815-1832, in which, despite the pressure of constitutional struggles, Canning "called a new world into existence to redress the balance of the old."

That is a bare international skeleton of the whole period, with a good many important bones missing. Most boys, in my experience, however "well up" they may be in individual bones—Blenheim, Plassey, Trafalgar, and the like—know very little of the skeleton as a whole. Yet the entire skeleton is more important, and not less interesting, than any separate bone. When we have once given to, or got out of, the class some such skeleton as this, we are ready to face quite a number of questions well worth asking. For instance, why this peace, or that war? Occasion? Causes? Motives? Theatres? Allies? Results? Did the war add to or diminish the burden of empire which rests on the shoulders of King Edward VII. this day? Did the war or the peace produce a man or an achievement upon which we can look back now with legitimate pride? Or—"lest we forget"—did it produce a man or a deed of which we have now learnt to be ashamed, and which we remember rather by way of warning than by way of example?

If a boy can answer such questions as these he will not be badly equipped for the Locals. If he has worked the answers out for himself—under discreet guidance and with the help of good materials, especially with access to some "real books," not mere compilations—he will also have had a mental training of no inconsiderable value. Fortunately, we may truly say nowadays that the study of such topics is not only more fruitful in itself but also "pays better" for the Locals" than the old style of question—date of the battle of Wynendael? Commanders on both sides? Exact number of combatants? How many corpses were counted on the field of battle? As a matter of fact, so far as the "valour" side of battles is concerned, the text-book got up for school lessons is not so good a "source" as the numerous boys' books which are easily procurable. Mr. Fitchett's "Fights for the Flag," and "Deeds that won the Empire," Marryat's sea stories and books like "Tom Cringle's Log," may be mentioned as examples of the kind of books which can supply boys with a useful basis for the teacher to work upon.

But in the somewhat more advanced aspects of foreign affairs, in which boys do not "naturally" take an interest, there is often a considerable difficulty in deciding what points to ignore and what to emphasise. And here the safe rule, both educationally and examinationally, seems to be to stick to what lies nearest to us—that is, to concentrate attention on what directly concerns Great Britain. Suppose we take the question of "motive" as an example. In the course of this period we find the following motives at work in influencing British Foreign Policy—taking them roughly in chronological order of operation:—

(1) *Defence of the Protestant Succession.*—This is dominant in Wars I. and II., and is prominent in War III.

(2) *Maintenance of the Balance of Power.*—This plays a prominent part in all wars except War V.

(3) *Self-Preservation*: as regards (*a*) the British Isles, (*b*) the dependencies of Great Britain and (*c*) the electorate of Hanover, which, though not a British possession, was closely connected with Great Britain by *Personal Union* from 1714 to 1837, and which, despite the clauses in the Act of Settlement, was necessarily an object of consideration to British statesmen. It would be a useful exercise for the student to collect instances of invasion, projected or attempted, of each of these groups of territories. It is well to remember that what Shakspere called the "silver sea . . . serving in the office of a moat," and what Maria Theresa less pleasingly described as a "curséd ditch," did not by itself protect England, still less the British Isles, from the possibility of hostile invasion, and that on several occasions during this period the peril came far nearer home than it did in December, 1899.

(4) *Commerce and Colonies.*—This motive is the main thing, so far as Great Britain is concerned, in the central wars of the period, numbered III.-V. above. As our country is often accused of land-hunger, we might take some pains to show our British-citizens-in-the-making that in the eighteenth century it was France, and not we, who began the struggle for exclusive trade and dominion both in India and in North America.

N.B.—In respect of both (3) and (4), the main thing to keep in view is the paramount importance to Great Britain of the command of the sea.

(5) *Destroying the Predominance of France.*—This is really the particular form which (2) assumes during the reigns of Louis XIV. and of Napoleon.

(6) *Assertion of Authority against Mob-Rule.*—This is the most seemly of the various reasons which have been alleged for British participation in War VI.

(7) *Assertion of Nationality against Autocracy.*—This is the common motive which influences several of the "little wars," or threats of wars, that mark the beginning of the Thirty Years' Peace, after 1815.

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Such are a few of the leading motives of British foreign policy during this period. They are expressed in more general terms, more simply, and more disconnectedly than they would appear in the minds of contemporary politicians, professional or amateur; but for us looking backward it is both possible and profitable to analyse them in some such simple fashion. Of course, these motives in actual working were influenced by the motives of the other States with which Great Britain was brought into contact; and this brings us to the crucial question how far we must go into foreign history in order to understand the history of Great Britain as a "Power." Here the standing difficulty is that we are constantly using terms which have a quite different meaning then and now—*e.g.*, "Austria," "Prussia," "France," "Holland." Nowadays we have come to speak of "Austria" and "Germany" as two distinct things, and experience shows how easy it is to throw back this distinction, in its modern form, into the eighteenth century. If boys can so easily form the astounding misconceptions about English possessions which are credibly reported by "Examiner" in the March number of THE SCHOOL WORLD, how much more easily will they fall into mistakes about foreign countries? What is the irreducible minimum that we must know about these foreign countries in order to speak or write correctly even about strictly *British* foreign policy? We must have at least an approximately true general idea what such names as "Austria," "France," and "Spain" stood for at the time we are treating. Practically, that means some acquaintance with the political map of Europe, and some acquaintance with a few dominant personalities in foreign lands. A dozen of the latter will suffice—say Louis XIV., Elizabeth Farnese, Frederick the Great, Maria Theresa, Kaunitz, Choiseul, Charles III., Louis XVI., Napoleon, Alexander, Blücher, Metternich. A portrait, a saying, and an anecdote about each of these will be enough to turn them from dull names into living beings; and it may be noted that the Cambridge examiners have thought it right—in my opinion quite fairly—to ask even Preliminary candidates what three of these persons had to do with English history. Portraits of most of these personages are accessible in the illustrated histories of England and of Europe.

The maps are a more difficult matter. Dr. Mill's recent complaints in these columns about physical maps might be repeated in stronger terms about the historical maps available at moderate cost. The maps, coloured or plain, in our text-books are not much good, and the teacher must do the best he can with the historical atlases bearing the names of Gardiner and Putzger. It will be found at once more interesting and more profitable to give time to the study of the outlines of historical geography than to the genealogical details which seem too often to be laboriously memorised. We must know something about the ruling families of Europe, but we need not concern ourselves greatly with the Electoral Prince Joseph, or with Maria Josepha and the rest. Nor need we get up the politics of France during the first French Revolution; it suffices to know how political ideas made in England influenced France during the eighteenth century, and how French methods of imitating our seventeenth century revolution influenced our own conduct during the Great War.

The important thing throughout is to lay stress on such details as illustrate such general principles as have been mentioned in the course of this paper. "Such," I say advisedly, for I can make no pretence to being exhaustive in the space at my command. I can but put forward a few points deserving—in my opinion and apparently in that of our examining bodies—prior consideration. The task of selecting from and adding to my selections, and also methods of treatment, I must leave to the individual teacher.

But I should like to add one point, based largely but not exclusively on personal preference: in view of the excellent books and maps bearing on the subject, of its absorbing interest, and of its general parallels to current politics, I should strongly recommend that particular attention be paid to the central portion of our period—extending from 1756 to 1783, and including, be it remembered, the partition not only of "the Kingdom or Republic" of Poland, but of the British Empire.

COMMON EXAMINATION ERRORS.

V.—SPELLING.

By H. R. LADELL, M.A.

IN spelling, as in other subjects, it is found that the same mistakes constantly recur in examination. That these mistakes occur much more frequently in groups from certain centres than with individuals from a large number of centres implies that methods are successfully adopted by some teachers to prevent the recurrence of such mistakes.

Mr. P. A. Barnett, in THE SCHOOL WORLD for September, 1900, states that "the people who spell best are generally found to be people who read copiously," and this is undoubtedly the case. But, unfortunately, many pupils do not read copiously, and of those who do a large proportion are careless readers who fail to compel the eye to register a correct visual impression. Instances of this occur in the frequent transposition of letters, when "reproducing in the form of transposition," *e.g.*, *form* for *from*, *spot* for *stop*, *yatch* for *yacht*, &c.

Some pupils, as pointed out by Mr. A. J. Evans in the January number of THE SCHOOL WORLD, misspel words even when they are given in the questions. Attention, too, is called, in the February number by Mr. Chisholm, to the large proportion of candidates in geography who spell the noun *peninsula* with a final *r*.

That there still remains something to be done in

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the teaching of spelling is, I think, evidenced by the fact that some twenty-five per cent. of the candidates in a recent examination failed to spell the word *disappear* correctly, and mistakes in more than forty other words occurred nearly as often. There is no doubt much difficulty in finding time to give to this subject in the already congested condition of most school time-tables; but, when English is taught, some five or ten minutes might occasionally be spared at the end of a lesson to dictate a few collected words which are commonly misspelt. The following notes, based on the results of several years of teaching and examining, will, I trust, be found of some service to those at present engaged in teaching.

Many very common mistakes may be traced to careless pronunciation, or to the want of careful visualisation on the part of pupils, such as:—*arbitary*, *artic*, *diphthong*, *goverment*, *independant*, *libary*, *loose* (for *lose*), *principle* (for *principal*), *adress*, *agreable*, *aimiable*, *buisness*, *incredable*, *laudible*, *Mediteranean*, *minuit* (for *minute*), *neccesary*, *neice*, *seperate*, *stationary* (for *stationery*).

Another most fertile source of mistakes for many pupils appears to be the doubling (or not) of the final consonant of a verb when forming the participles. As this involves the spelling of many hundred words, the following rule should be of use to them: verbs ending in a single consonant, preceded by a single vowel, double this consonant when adding *—ed* or *—ing*. This rule has no exception in the case of monosyllabic verbs, as *blot*, *blotted*, *blotting*; and with verbs of more than one syllable it also holds good, if their final syllable is accented, as *prefer*, *preferred*, *preferring*; otherwise not, as *offer*, *offered*, *offering*. The few exceptions to this rule consist principally of verbs ending in *l*, such as *cancel*, *counsel*, *equal*, *initial*, *label*, *level*, *libel*, *model*, *quarrel*, *revel*, *shrivel*, *travel*, to which *worship* should be added. In all these words English writers double the last consonant, contrary to the above rule; American writers, however, make no exceptions.

Mistakes in words containing the prefixes *mis—* and *dis—* would be more often avoided if it were observed that these prefixes are merely attached to the words which follow them, without producing any orthographical change in the latter, but *dissappeared*, *dissappointed*, &c., are mistakes of frequent occurrence. Some knowledge, too, of the force of other prefixes would prevent such mistakes as the following:—*agravate*, *comittee*, *discription*, *imediat(e)ly*, *inumerable*, *interupt*, *suceeded*.

Words containing the adverbial suffix *—ly* are also very commonly misspelt, as *continualy*, *equaly*, *literaly*, &c., through omitting to notice that adjectives ending in a single *l* retain the *l* before this adverbial termination.

Such common mistakes as *beleived*, *beseiged*, *percieved*, *peice*, &c. might be avoided if it were noticed that, when *e* and *i* are combined to produce the sound of long *e*, the *e* precedes *i*, after *c*, as a natural consequence of the derivation of such words as *receive*, *deceive*, *perceive*, *conceit*, &c. One hesitates to suggest, as involving no mental effort on the part of the pupil, the mnemonic jingle—*i* before *e*, except after *c*—unless in conjunction with the above statement. The apparent exception, *seize*, can also be referred to its derivation.

It would be impossible for the different examiners to include in their reports a list of the words most frequently misspelt by the candidates, as it would occupy too much of the space required for their special subjects, but the following list collected from a recent examination may prove of interest to many teachers, only those mistakes which occurred most frequently being given:—*acquited*, *admited*, *aimiable*, *apostrophy*, *batallion*, *beged*, *begining*, *beleived*, *besciged*, *buisness*, *commited*, *dificulty*, *discribing*, *dissapeared* (with many variations), *draw* (for *drawer*), *embarassed*, *envelloped*, *frightfull*, *glideing*, *immagination*, *inumerable*, *inexpressable*, *incredable* (frequently also *increditable*), *litteraly*, *minuit* (for *minute*), *ommited*, *percieved*, *peice*, *permissable*, *powerfull*, *preceeding*, *prefered*, *quarreled*, *refered*, *seperated*, *stoped*, *succeded* (and *suceeded*), *suplicated*, *unroled*, *visably*.

In the above notes I have not touched upon the current spelling of many debatable (or debateable) words which have formed the subject of discussion in *The Times* and other papers from time to time, but have confined myself to those of which one form is generally admitted. Examiners, as suggested by Dr. Abbott in one of these discussions, probably exercise "a reasonable tolerance in such matters," and in actual dictation tests these words appear to be generally avoided.

Mr. Barnett, in his paper on "Spelling," recommends that "transcription should be called in aid from the beginning; first of words, and afterwards, as soon as possible, of sentences and paragraphs." To any but very young pupils, a dictation of ordinary length generally presents no more than one or two difficulties, but if these be collected and added to those mistakes occurring in essays, examination papers, &c., a fairly long list will soon be obtained. To transcribe twenty or thirty of these words would take less time than an ordinary dictation, and it will usually be found that the same mistakes are repeatedly made by the same pupils.

To assist them to avoid this, special groups of words in which a common error occurs can from time to time be selected from the list, and, after a few dictations, it will be found that such errors will rapidly decrease. While the pupils are writing down one word, the teacher will not find much difficulty in improvising a short *sentence* containing the next, merely indicating by special emphasis the word to be transcribed, and thus "eye and mind may be concerned jointly with ear and tongue in one complicated operation." As a useful variation, the pupils might be given ten or a dozen words and be asked to frame sentences themselves embodying the given words. By interchanging the papers, very little time need be occupied in correcting.

If possible, pupils should be made to keep a list of mistakes they make, when they will themselves see that the same errors are constantly recurring and are likely to continue to do so until

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they personally make some effort to prevent this. A few schools have collected and printed their own lists of the mistakes frequently made by their pupils, a system far preferable to using much longer lists of words in which mistakes might possibly occur. The present writer can testify from personal experience to the satisfactory results produced by following some of the methods suggested above.

LYRA HEROICA AND THE COMING AND PASSING OF ARTHUR, &c.[1]

By J. A. NICKLIN, B.A.
Late Scholar of St. John's College, Cambridge.

GENERAL.

IN so wide a field of study some definite lines for observation and some principles of grouping are absolutely necessary, even if they have to be rather arbitrarily imposed. The mechanical processes involved in a collection of metaphors and similes, an analysis of metres, and an examination of form by the ordinary canons of poetic species—the limitations of the ode, the elegy, the epic and the idyll—these are superficial methods that suggest themselves at once. They have their merits. A conscientious review of the images and the metrical effects employed by each poet will reveal something of the secret of their art. An application of the time-honoured distinctions of *genre* to the poems which have to be studied will teach us something of the development of poetical form under the pressure of spiritual and intellectual revolutions. But far more important than the formal side is the apprehension of that meaning in poetry which Matthew Arnold designates as "criticism of life." It is a description which belongs not merely to poetry, but to all literature. The essential idea of literature is that it should be the envisagement of some aspect of life. This envisagement we have ever to seek to apprehend alike in the flaming imaginations and resonant utterances of an epical poet, or the *abandon* of a bacchanalian lyric. The envisagement may be conscious or unconscious; the poet may analyse his own feelings or the feelings of another, or he may try to evoke an impression or state of mind which was before latent and inarticulate in himself and others. But he is always concerned with something which has power over the hearts of men, whether sight or sound, dream or thought. His subject is always something which gives meaning and zest to life; it may be the zest of heroic daring, of strenuous action, of beauty, of desire, or even of sorrow and terror. In our search for this revelation of the poet, for his individual contribution to human consciousness, we are engaged in an æsthetic, not a moral or philosophical interpretation of poetry. It is the only road to æsthetic appreciation, for it is the direct road to the very essence of poetry. On the other hand, any investigation of the formal side, judiciously conducted, will lend aid to this interpretation. The poet effects his envisagement of life by the magic of style, and the study of his technique will assist our apprehension of his envisagement.

LYRA HEROICA.

Mr. Henley's selection of poems is governed by a single directing idea which is sufficiently expressed in the title. Most of the poems are concerned with action; nearly all of them have for their motive the nobility of courage and duty. In all of them stress is laid on the quality of intensity, though that intensity may be passive as well as active. The ideal always held up is that of the fulfilment of the soul's possibilities—function at its highest, as the old Greek philosopher has it—but this fulfilment may be achieved by reserve as well as by effusion. The ideal is as truly present in—

> 'Tis wisdom, and that high,
> For men to use their fortune reverently,
> Even in youth,

as in—

> Come; and strong within us
> Stir the Viking's blood,
> Bracing brain and sinew;
> Blow, thou wind of God.

Though there is a single idea informing every poem, the variety of presentation is endless. To mention a very few of the aspects envisaged—there is the fascination of the unknown for the wandering spirit: "the sagas of the seas" and "the undiscovered deep"; there is the fascination of what is at once vague and palpable in nature, as clouds or sea or fire—"down cloudy cliffs, through sheets of foam," or "the shadow and shine of the flickering fire of the winter night"; there is the moral impressiveness of a tranquil mind, as in the quaint antithesis, "Lord of himself, though not of lands;" or of the heroic temper, as in, "Life is but the pebble sunk, Deeds, the circle growing;" and of melancholy disguising itself in recklessness—

> Then for that reason,
> And for a season,
> Let us be merry
> Before we go.

There is the mingled effect of imaginative and moral impressions, such as, after one kind, is felt in: "There is no armour against Fate: Death lays his icy hand on kings." And, after another kind, in—

> Let us think of them that sleep
> Full many a fathom deep
> By the wild and stormy steep,
> Elsinore!

This is a quest that should be carried relentlessly through the whole volume.

As for the magic of style, without which the poet cannot fully deliver himself of his revelation,

[1] The "Lyra Heroica" is one of the set subjects for the English Literature Paper (First Year) of the Certificate Examination in 1901 of the Board of Education; and "The Coming" and "The Passing of Arthur," "The Lotos Eaters," and "Ulysses," are set subjects for second-year students in the same examination.

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it is everywhere diffused, but concentrates itself in chief in what is technically known as "felicity"; that is, in moments where a happy chance seems to have leagued itself with the poet's admirable intention. Two slight examples are—one of a conspicuous artlessness, the other of an undisguised but unoffending art—

> But bowed his stately head
> Down, as upon a bed;

and—

> Still nursing the unconquerable hope,
> Still clutching the inviolable shade.

A constant use should be made of comparison and contrast, whether of theme, treatment or form, while form and treatment should always be referred, for their justification, to the theme. Thus Shirley's "King of Kings" should be put beside Scott's "The Omnipotent," Landor's treatment of the sacrifice of Iphigeneia should be considered along with Matthew Arnold's "Schrab and Rustum." Gray's "Bard" is a composition of the same stamp as Dryden's "Ode to Saint Cecilia." Both have a somewhat similar framework for the setting of a number of pictures, and both are examples of a metre and rhythm variable according to the succession of themes. Simple and unpretentious ballads like "Brave Lord Willoughby," "The Angel Gabriel," and Dibdin's sea-songs, should be compared with Cory's deliberate essay at the same *genre*, "The Two Captains." The Scotch ballads, belonging to a very different school —their unknown authors are distinguished from the English balladists by imagination, colour, and peculiar technique—have been deliberately, though not consistently, imitated by Rudyard Kipling in "A Ballad of East and West." Such tricks of phrase as, "If I had raised my bridle-hand, as I have held it low" . . . "If I had bowed my head on my breast, as I have held it high," and "The dun he went like a wounded bull, but the mare like a new-roused fawn," can readily be paralleled. The assiduous simplicity of the blank verse written by Matthew Arnold and Landor stands out in contrast to the lavish opulence of diction in Shakespeare's choruses. Another sharp contrast may be felt between the spontaneity of genuine lyrics like "Auld Lang Syne" or Swinburne's "Oblation," where the feeling dictates the manner of its own deliverance, and the entirely rhetorical structure of either such a pseudo-lyric as "The Pilgrim Fathers," where the process by which the piece was systematically built up is discernible on the face of it, or such a martial piece as "The Red Thread of Honour." Stevenson's "Mother and Son" derives its origin from Walt Whitman, though those poems of Whitman which are its nearest congeners do not appear here. It is not an unprofitable question to inquire what "The Scholar Gipsy" (the extract given is headed "Flee fro' the Press") owes to Lycidas, and Drayton's "Agincourt" may be regarded as the ancestor of "The Heavy Brigade." Sometimes even small borrowings are worth tracing. Whitman's "ghastly phantom moon, immense and silent moon," is the touch of a poet who could not figure in a "Lyra Heroica"—Edgar Allan Poe. Gray's "Elegy" is not included, but everyone will recognise the source of—

> —— blithe herds
> Wend homeward with unweary feet,
> Carolling like the birds;

and, recognising, will laugh at the unlucky ambiguity of "herds."

The Coming and the Passing of Arthur.

The "Morte d'Arthur" and its setting should be consulted before reading "The Passing of Arthur," as from the additions that converted that fragment into the last Idyll of the series something may be gathered of Tennyson's intention to substitute for mere "Homeric echoes" a treatment which would involve all the deepest interests of latter-day humanity. "The Coming of Arthur" ought perhaps to be studied after "The Passing," rather than before it. Specially significant in the development of Tennyson's conception, and for the inter-dependence of the two poems, is Sir Bedivere's recollection of Merlin's prophecy, "From the great deep to the great deep he goes," and the difference between the conclusion of the "Morte d'Arthur"—"and on the mere the wailing died away"—from the conclusion of the "Passing"—"and the new sun rose bringing the new year," though something of the kind is foreshadowed in the epilogue to the earlier poem. Equally significant, if not for the intention, at least for artistic effect, is the confusion that fell on the battling hosts, and the "blind haze" which enveloped Arthur since he "saw one lying in the dust at Almesbury." The same may be said for Sir Bedivere's inspired assertion of Arthur's sacred mission, so quickly to be followed, like St. Peter's bold assertion in similar case, by a moment of apostasy.

The intention of the two poems is easy to make out. I shall confine myself to a very brief comment on the characteristics of Tennyson's art as it appears in them. The manner of the poems may be succinctly described as displaying (1) a studied simplicity in narrative, often adapted to some weird or impressive effect, as—

> On one side lay the Ocean, and on one
> Lay a great water, and the moon was full;

(2) slow and laboured utterance, where it is a matter of argument or reflection; (3) exceptional power of visualising an object, and of suggesting sound or action, as—

> —— that Arthur who, with lance in rest,
> From spur to plume a star of tournament,
> Shot thro' the lists at Camelot.

> Dry clashed his armour in the icy caves
> And barren charms, and all to left and right
> The bare black cliff clanged round him, as he based
> His feet on juts of slippery crags that rang
> Sharp smitten with the dint of sudden heels.

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—— while Arthur, at one blow,
Striking the last stroke with Excalibur,
Slew him, and all but slain himself, he fell.

(4) A kind of return on his phrase, as—

With whom he dwelt, new faces, other minds.

Among new men, strange faces, other minds.

(5) A very frequent termination of the verse-paragraph with the same movement.

(6) Occasional lines of Shakespearean sententiousness, as—

Authority forgets a dying king.

Ulysses.

"Ulysses" is a kind of idyll, or picture, the intention of which is obvious. It is a study of the roving spirit of the sea-farer, proving itself too strong for the love of home and old age's natural desire for peace. At the same time, a kind of allegory, which it is unnecessary to develop, underlies it. The constant qualities of Tennyson's poetry appear in it markedly. The verse is even more musical—almost monotonously musical—and less declamatory—than in the "Idylls of the King." The visualising power of the poet, and his acquired facility of concentrating that power into a telling phrase, is very clearly distinguished, and the images are all such as to suggest the glamour of the unknown seas or some mysterious suggestion that stirs the soul to unrest.

The Lotos Eaters.

The theme of the "Lotos Eaters" is the mind's antithesis to the wanderer-spirit. It represents one of those tropical lands "where all things always seem the same." The natives are "mild-eyed" and "melancholy," the languorous atmosphere is steeped in odours of oblivion. The spirit of the place takes hold of the wanderers. They are seized with unutterable weariness of the sea and sea-faring. Faint memories of the past hold them with an enchantment the more inevitable for their very faintness. They become like ghosts; the world of men from which they shrink would skrink from them. And the end is Nirvana.

The movement of the poem keeps pace with the thought. It is uncertain, almost halting; the images are beautifully blurred. It scarcely holds us, because it aims at charming our attention asleep.

Books Recommended.—Tennyson's "Lotos Eaters," etc., by F. J. Rowe and W. T. Webb (Macmillan). "Notes and Elucidations to Lyra Heroica," by L. Cope-Cornford and M. W. Greg (D. Nutt).

Perfection,—as culture from a thorough disinterested study of human nature and human experience learns to conceive it,—is a harmonious expansion of all the powers which make the beauty and worth of human nature, and is not consistent with the over-development of any one power at the expense of the rest. Here culture goes beyond religion, as religion is generally conceived by us.—Matthew Arnold.

PREVENTION OF INFECTIOUS DISEASE IN SCHOOLS.

By C. E. Baddeley, M.D.(Lond.)

IV.

Isolation and Disinfection.

(*Concluded from p.* 134.)

When a case of infectious disease has been detected, our first object is to prevent the infective particles escaping from it to other susceptible individuals, and thus forming fresh foci for the spread of the disease. We endeavour to effect this by *Isolation* and *Disinfection*. By the former we endeavour to prevent the infective organisms escaping from the body of an infected person obtaining access to the bodies of healthy individuals, and by the latter we endeavour to destroy the vitality of the organisms within, and escaping from the body of an infected person. Both of these demand a short consideration.

Absolute isolation of an infected person is not practicable; he must have access to the atmosphere for respiration, and some persons must wait upon him during his illness. Nevertheless, our knowledge of the life history of infective organisms enables us to place him in such circumstances as to make their escape very difficult. He should be placed in a large and well-ventilated room as remote as possible from the rest of the community, and the persons appointed to wait on him should, as far as possible, seclude themselves, and, moreover, should if possible be immune to the disease from which he is suffering. The arrangements of the room should be such that the infective organisms within it may be readily destroyed by *Disinfection*. In these circumstances a large number of infective organisms will undoubtedly escape into the atmosphere; but there is no evidence that they can maintain their vitality in it very long, or be transported very far by its means. Sunlight and the atmospheric ozone are both germicidal to many organisms, and may in this sense be said to be Nature's disinfectant. In organic media, such as moist secretions, soiled linen or clothing, or even when encased in tenacious secretion, such as expectoration, and dried as dust, infective organisms may maintain their vitality and virulence for a much longer period, and it is in such media that we must endeavour to destroy them by disinfection.

Disinfection means the destruction of the vitality of infective organisms by various physical and chemical means. To ensure the destruction of the vitality of an infective organism such as a bacillus, the destructive agent must be enabled to act directly upon the protoplasm of the organism, with a definite amount of energy and for a definite time. Of all these destructive agents heat is the most effective and generally applicable. Thus, when the organisms are in a liquid medium, a temperature of boiling water, maintained for a quarter of an hour, will ensure their destruction.

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When the organisms are in the atmosphere, or enclosed within a solid medium, such as soil, dried expectoration, or other discharge, or household goods such as bedding or books, this degree of temperature may be insufficient, especially if *spores* are formed, and to ensure their destruction a higher temperature must be used. This is generally obtained by making use of steam under pressure, and disinfecting chambers where this agent is made use of are now provided by many sanitary authorities.

Within the human body heat such as will ensure the destruction of infective organisms cannot be employed, and only such germicides as will not destroy the tissues can be made use of, but in appropriate strengths several such can be applied, especially to destroy organisms which are limited to one or more of the cavities of the body.

A large number of substances, gaseous, liquid, and solid, are efficient germicides when applied in sufficient strength. Some act by decomposing the protoplasm of the organisms, such as chlorine and sulphurous acid gases, salts of mercury, &c. Others by destroying its vitality without effecting any chemical change, such as formic aldehyde, carbolic acid, boric and salicylic acids.

Infective organisms suspended in the atmosphere of a room may be destroyed by mixing in the atmosphere a gaseous disinfectant, such as chlorine or sulphurous acid, but the mixture must be of such strength as to be quite unfit for respiration. And such disinfectants can, therefore, only be made use of in rooms which are unoccupied. Indeed, it may be said that an atmospheric disinfectant which is effective, and can also be respired without injury, is a desideratum. Formic aldehyde gas perhaps approaches most nearly to this.

In a liquid medium many of these substances are quite efficient when used in proper strength, solutions of mercuric chloride (corrosive sublimate), carbolic acid, and formic aldehyde (formaline) being perhaps the most useful. Boric acid, salicylic acid, and formaline are also largely made use of as "preservatives," to prevent decomposition in foods. This they do by preventing the growth of putrefactive organisms in the food to which they are added, but this practice is not without disadvantage, or even danger. For disinfection in a sick-room formaline is perhaps most useful, curtains moistened with it being hung around so as to arrest the infective organisms floating in the atmosphere. The floor and furniture may be damped with a 5-per-cent. solution of carbolic acid. Soiled linen should be placed in a solution of formaline or carbolic acid. Liquid and semi solid excreta should be placed in a 5-per-cent. solution of carbolic acid before removal for destruction. Woollen articles, such as clothes and bedding, should be wrapped in sheets moistened with a 5-per-cent. carbolic solution, and removed to the disinfecting chamber, and all earthenware, glass, and metal utensils should be boiled.

It cannot be doubted that if these precautions of isolation and disinfection were systematically applied to every case of infectious disease, a very large number of the infective organisms from them would be destroyed, and the number of fresh cases of that infectious disease would be made less. And as each fresh case of disease is a focus from which a practically unlimited number of infective organisms can be disseminated, the lessened number of fresh cases and stricter isolation of each would immensely diminish the sources and number of infective organisms. So that in a community so protected certain of these diseases might be expected practically to disappear, as there is no evidence to show that the infective organisms which cause diseases can maintain their vitality for any great length of time outside the bodies of susceptible individuals. The total abolition of these infectious diseases in a community is, with our present knowledge, hardly to be expected, but that much can be done to limit them is amply proved. Increased knowledge of the life history of the different specific organisms which cause disease will enable us to adapt our destructive measures to the special peculiarities of each, and thus more effectively limit their activity. It is in this direction that the study of these minute organisms has already proved itself of immense value, and, so far as it is possible to foresee, this progress will continue.

TYPICAL SCHOOL TIME-TABLES.

VI.—Cheltenham Ladies' College.

THIS month we give selections from the Time Table of this College; it is in no sense complete so far as showing the work of the College as a whole is concerned; it is rather to be regarded as providing specimens of the manner in which the time is apportioned in some of the numerous classes.

It will help to make the Time Table more easily understood if we point out that this Institution, like King's College, London, consists of a School and a College; there are also a Kindergarten and a Training Department. Besides these there are special departments for Music, Art, Science, Technical Work, &c.

Only the morning hours are given in the Time Table, and as many of the Music and Drawing lessons of the senior girls, the laboratory practice of the students of science, lessons in Drill, Dancing, Handicrafts, Orchestral Music, &c., are given in the afternoon, these subjects do not appear. The juniors give one hour to preparation and the grown-up students about three hours. It should also be noted that there is an interval for lunch at 11 o'clock, and that the junior classes have a longer interval and shorter lessons than the senior.

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CHELTENHAM LADIES' COLLEGE.

SPECIMEN TIME TABLES, 1901.

		DIVISION I.										DIVISION II.			DIV. III.
	CLASS	I. *a.*						I. *b.*	I. 2 *a.*	I. 3 *a.*	I. 4 *b.*	II. 1 *a.*	II. 3 *b.*	II. 5.	III. 1.
DAY	TIME	FINAL ARTS (LOND)	FINAL SCIENCE	INT. ARTS	MATRICULATION	CAMBRIDGE HIGHER LOCAL (*a*)	(*b*)								
MONDAY	9.25	History	Maths	Greek	Scripture	Scripture	Scripture	Scripture	Scripture	Scripture	Scripture	Euclid	Scripture	Scripture	Scripture
	10.0	Constl Histy	Chemistry or Physics (3 hours)	Latin	Algebra	French Lit	Euclid	Euclid	Eucl or Arith	History	Euclid	Ger or Latin	Ger or Latin	Sci, Ger or Lat	French
	11.10	Maths or Mental Sci		Alg or Logic	Gk or French	E or F His v.v.	Early English	Gk or Ger	French	Euclid	German	Arith	Grammar	Geography	Drill & Sing
	12.0			Trigonometry	Science	French	German	Latin	Hyg or Lat	Geography	Latin	Grammar	Gen Histy	Grammar	Fr & Arith
TUESDAY	9.25	English	—	Roman Histy	Euclid	Arith	Arith	Literature	German	Ger Trans	Literature	Scripture	Scripture	Scripture	Scrip & Fr
	10.0	Engl or Fr	Botany	Greek	Science	Engl Histy	Geography	Engl Histy	Literature	Church Histy	French	French	Geog & Drill	Drawing	Geog & Drill
	11.10	Classics	Chemistry	French	Latin	German	French Trans	French	Arith	Arith & Alg	Arith	History	Drawing	Chronology	French
	12.0	Maths	Physics	Eucl or Logic	Gk Fr or Chem	French Trans	Early English	Hyd or Fr Tr	French	German	Drawing	Algebra	Sing & Fr Tr	Arith	Arith
WEDNESDAY	9.25	Roman Histy	Botany	English	Scripture	Scripture	Scripture	Scripture	Scripture	Singing	Singing	Prayer Book	Euclid	French Trans	Scripture
	10.0	Classics	Botany	Latin	Algebra	Constl Histy	French	Algebra	Modern Histy	Latin	History	Geography	French	History	History
	11.10	English	Astronomy	History	Latin	French	French Trans	Physics	German	Botany	Algebra	Arith	Arith	Read & Geog	Geography
	12.0	Classics	Physics	Trig or Logic	Science	French Histy	Literature	Pract Physics	French Trans	French	Geography	Drill & Ex	History	French	Drill & Arith
THURSDAY	9.25	French	Physics	Euclid	Lit Class	History v.v.	Lit Class	Lit Class	Lit Class	Lit Class	Scripture	Scripture	Ger or Latin	Ger or Latin	Ger Lat or Euc	Scripture
	10.0	Fr or Maths	Maths	Greek	Literature	Literature	Literature	Literature	Literature	Literature	Literature	Literature	History	Drawing	Arith	Drawing
	11.10	Classics	Chemistry	Conics	Science	German	Latin	Arith	Arith	French	Drill & Histy	Draw or Fr	Science	French Read	Gen Histy
	12.0	Gk Histy	Maths	English	Eng Language	French Histy	Literature	Gk or Ger	German	Botany	German	Algebra	Read & Ex	Drill & Ex	French Trans
FRIDAY	9.25	Maths	Botany	Engl Histy	Calisthenics	Scripture	Arith	Scripture	Scripture	Latin	Algebra	Scripture	Drill & Histy	Composition	Scripture
	10.0	English	Physics	French	Euclid	Arith	Fr Convers	Latin	Latin or Drill	German	Latin	French	Geography	Drawing	Histy & Fr
	11.0	Classics	Maths	Latin	History	Engl Histy	Literature	French	French Trans	French Trans	French	Ger or Latin	Ger or Latin	Ger or Latin	Gram & Drill
	12.0	Hist or Maths	Maths	Gk Histy	Latin	French	French	Chemistry	Arith & Sing	Arith	Botany	Sing & Drill	Arith	French	Fr & Arith
SATURDAY	9.25	Scripture	Scripture	Scripture	Scripture	Arith	Scripture	Fr Convers	German	Scripture	Scripture	Scripture	Scripture	Scripture	Scripture
	10.0	Classics	Maths	Greek	Science	French Histy	Literature	Ger Tr or Lat	Fr Convers	French	Latin	Euclid	French	French Trans	Read & Writ
	11.0	Engl or Fr	Chemistry	French	Gk Fr or Chem	German	Latin	Fr Tr & Drill	History	Algebra	Arith	Physiography	Euclid	Dic & Cls Sing	Fr & Arith
	12.0	Maths	Chemistry	Algebra	Hydrostatics	—	Geography	—	—	—	—	—	—	—	—

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NATURE-STUDY AS A SCHOOL SUBJECT.

By W. Spencer Buxton, Ph.D.

TO encourage nature-study in rural schools, the Board of Education has recently published a series of specimen courses of lessons drawn up by teachers and found by them to be practicable. The schemes of work are suggestive, and well worth the attention of masters and mistresses interested in natural history, and possessing sufficient opportunity and knowledge to become interpreters of outdoor nature. The aim is to bring country children into sympathy with their surroundings, and lead them to understand some of the principles underlying rural pursuits and operations. Pleasant are the roads to knowledge thus laid down. The studies are to be of a general character, and no attempt is to be made to systematise them. Intelligence is to be developed in children by taking advantage of their natural inquisitiveness, emulation and activity; and a taste for work and study out of doors is to be encouraged by class excursions. This reads very attractively, and if the schemes can be carried out without interfering with the ordinary work of a school, while the Board of Education smiles approval, the teachers and pupils are to be congratulated upon their happy lots. From the introduction to the schemes, the following notes upon the subjects included in them and the points to be borne in mind when dealing with them are of especial value.

The subjects that are of special interest to children living in the country are set forth under the following heads, which contain none that cannot be studied through lessons in which the objects which are chosen for illustration may be actually seen, watched or handled, or in some cases measured:—

Birds and their habits.

Insects. The life history of a few common insects.

Flowers. The growth and habits of some wild and garden flowers.

Trees and the common kinds of timber.

Ponds and Streams. Living things in still and running water. Sand and mud. Pure and impure water.

Soils, mud, sand, clay, gravel, &c. Observation of quarries and lime pits.

Air. Weather chart. Rainfall. Frost and Heat. Ventilation.

Breathing. Digestion. The Heart and Blood.

Physics in every-day life. (Clothing and warming.)

Chemistry in every-day life. (Food of man, beast and plant.)

Mechanics in every-day life. (Levers and pulleys.)

Natural History Calendars.

Outdoor studies in Geography. Land measuring.

Of course no school will attempt all the subjects which are here suggested. Various groups of object lessons will be arranged for various schools according to the tastes, acquirements and opportunities of the teachers.

It will be apparent that studies of the above kind are not to be regarded as separate subjects which can be dealt with independently of the rest of the work of the school. They cannot be set down on the time-table under one specific head. The reading lesson, for example, may treat of an object which has been dealt with at another time by direct observation or experiment. The art of describing what has been seen or handled will be practised in the lessons on English composition. Measurements of land, and similar calculations in connection with the object lessons, will afford practice in arithmetic, while drawing and manual training will both be called into play to illustrate many details which are inadequately understood without their aid. The general instruction of the school will be modified in many of its branches by the study of the world of nature outside.

Consequently work of this kind is not of the nature of an additional study (as it is, for instance, in the case of commencing a foreign language), but rather a change in the contents of the lessons in the ordinary subjects, and the Board of Education are aware that this change can only be made gradually.

Hints to Teachers.

(1) Do not attempt too much in one lesson. One object may usefully supply matter for several lessons, each beginning with a little recapitulation of what has been found out before.

(2) Secure a succession of suitable objects.

(3) In every expedition take care that the class know beforehand what they are going to see, and that they afterwards make some written or drawn reproduction of what they have seen.

(4) The instruction given should be based upon observation and experiment. It is very important that lessons should not be given upon subjects which cannot be seen by the children or demonstrated to them.

(5) Encourage the children to draw the various objects and apparatus shown, and especially such things as the various stages in the development of the tadpole from the egg, the germination of seeds, the structure of flowers, &c.

(6) In some cases the children may be encouraged to make simple models of objects which they have seen and examined, but in no case should the model replace the actual object.

(7) The children should be called upon in turn to assist the teacher in preparing apparatus for experiments.

(8) The instruction should in every case be appropriate to the season of the year and the circumstances of the locality.

(9) In nature lessons, kindness to animals and respect for life should always be impressed on the children.

There are a few points upon which a few comments in connection with these schemes will not be without interest. In the first place, it is to be doubted whether many teachers in country primary schools are sufficiently familiar with the features of Mother Nature to describe them; and unless they have devoted attention to her ways they will find it difficult to explain them. The teacher who conducts a class on a natural history expedition, and is not himself well acquainted with outdoor nature, will return in the condition of a witness who has been subjected to a severe cross-examination in a law court. He will learn that there are many curious things on earth, in water, and in air, the nature and significance of which he is at a loss to discover. In fact, unless the teacher is a naturalist himself, by inclination and by experience, neither he nor his pupils are likely to derive much satisfaction from the excursion.

Even when the teacher is inspired with a love of nature, the difficulties in the way of out-door lessons are very great. The day upon which an expedition has been arranged may turn out very stormy, so the lesson has to be postponed. The sun's altitude is to be measured on the shortest

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day of the year, but this is prevented by the sun refusing to appear. The forms of snow flakes are to be observed under a microscope, but the flakes do not have the beautifully symmetrical shapes illustrated in books. Frogs are to be developed from spawn, but the spawn, though carefully preserved, is not transformed into tadpoles, or the tadpoles will not become frogs, but remain tadpoles until they are found dead in the water.

These and many other difficulties will present themselves to the teacher who attempts to give instruction in natural objects and phenomena without being well acquainted with the vagaries of nature. "She's a rum 'un, is Nature," and her character is only known to those who have tested it.

There are very good reasons why nature-study can only be treated as an adjunct to other subjects, so far as the school time-table is concerned. The fundamental principles of physics and chemistry admit of simple experimentation both in class room and laboratory. The experiments can usually be brought to a conclusion, and an instructive result obtained, in the hour or two at the disposal of the teacher or pupil. It is thus possible to work steadily through a course, and to secure attention to the points to be elucidated. Moreover, when dealing with the inorganic world, the experiments can be described with sufficient precision to ensure their success when performed with moderate care. But with organic nature the case is more complicated. After planting seeds, for instance, it is necessary to wait for some time before any result can be observed, and if anything goes wrong with the plants or the animals under observation, another opportunity of repeating the experiment may not occur until the following year. This, it would seem, explains why nature-study, though of deep interest, is less adaptable to school work than physics and chemistry. Probably the best way of dealing with it is through the school natural history society, instead of attempting to find a place for it in the curriculum. In any case, the stress of work in a secondary school will but rarely permit of expeditions in school hours, even if the weather conditions were so settled that arrangements could be made in advance. With a master or parent in sympathy with nature, an excursion into the country can be made a source of instruction and interest—to some boys. Such field-days can be best arranged in connection with the natural history society of the school, or a Sunday walk may be utilised to direct attention to some of the characteristics of natural things. Unfortunately, field-days have a tendency to become picnics, and the main object is often kept unobtrusively in the background. Only when the master is himself not only an enthusiastic naturalist, but is also capable of inspiring the same spirit in others, does an excursion of this kind create a new world for the pupils. It is, however, not to be expected that every teacher has had the time or opportunity to become an efficient interpreter of all the signs and wonders of nature, but there are many who desire to know more of natural history and to foster a love of the subject in the pupils under their charge. To these teachers such notes as those given by Prof. J. A. Thomson in the April number of THE SCHOOL WORLD and the course of "Experimental Plant Physiology" communicated by Prof. L. C. Miall to the February issue are very helpful. What I should like to see are statements of the experience of a few teachers in secondary schools of various types as to the practicability of nature-study as a school subject, and the means by which it can be adapted to the capacities and opportunities of the average boy.

CAMBRIDGE LOCAL EXAMINATIONS, 1900.

HINTS FROM THE EXAMINERS' REPORTS.

PUBLIC examinations are of the greatest value in at least one respect. They reveal, with startling clearness, certain widespread weaknesses shown by candidates from all parts of the country, and from schools of many different grades, adopting a great diversity of methods. No surer means of discovering those divisions of the subjects taught in secondary schools which present peculiar difficulties to boys and girls are at present available. The Reports of the Examiners in the Cambridge Local Examinations held last December are consequently worthy of a critical study. The teacher who is anxious to do his best for his pupils will be well advised in obtaining a copy of the "Forty-third Annual Report of the Syndicate of the University of Cambridge," where he will find these common failings duly chronicled. These reports contain, in addition to notes on the weak spots in the candidate's armour, a comparison of the standard of the answers of last December with those of previous years. We only have space enough to direct attention to the most noticeable of the general failings. We must refer the interested teacher to the official reports themselves for other information he may require.

Senior Candidates.—The examiners in *Arithmetic* report that a question on Compound Interest was worked correctly by almost all who employed decimals, and incorrectly by almost all who did not. In this and in a question in Practice only about fifty per cent. of the candidates understood the expression "correct to the nearest penny," and of those who gave the correct results few arrived at them by proper methods of approximation.

The candidates in the examination on the *Epistles* generally showed themselves lacking in the power to reproduce in their own words the thoughts of the Epistles, and in most cases merely quoted *in extenso* the very words of the writers. The literary form, too, of many of the answers left room for improvement, and there were some cases of very bad spelling.

There was in the answers to the questions on "As You Like It" much irrelevance in the an-

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swers to the question on the way in which character is illustrated by the speeches of the Banished Duke and Jaques on forest life and scenes. Many candidates supposed that a sufficient answer was given by writing out the speeches in full: others described the characters of the persons referred to without any special reference to the speeches in question. The art of paraphrasing was as little understood as in previous years: the renderings in most cases missed the meaning, and in all but a few entirely failed to elucidate the syntactical construction of the passage. But the candidates showed a decidedly better knowledge of the play *per se* and a very real and lively interest in its characters and setting; they also showed more independence and intelligence in the use which they made of text-book helps.

There were in the *History* answers two curious mistakes made frequently: one was the use of the expression "scarcity of labour," where "scarcity of employment" was meant: the other, the use of the date 1600 for 1500, the year being over and over again given correctly in the wrong century. Slang expressions, topical allusions, and references to current politics are to be deprecated.

The work of the Senior girls in *Latin* was disappointing. Nearly forty-five per cent. failed to secure the minimum for passing in unprepared translation, and in many cases there was scarcely any approximation made to the meaning of the piece. Guess-work of the most flagrant kind was frequent.

The chief defect noticeable in the *German* papers was unfamiliarity with the ordinary German expressions found in everyday literature and conversation, and this deficiency was conspicuous in the composition, of which very few correct and idiomatic versions were submitted.

The work of the girls in *Algebra* was very much inferior to that of the boys: good sets of answers and intelligent work were the exception. Many girls sent up quite worthless attempts on seven or eight questions: in equations x was left in terms of x; in bookwork on Geometrical Progression a line or two that was utterly wrong often indicated that the candidate was dependent on memory. One specially unsatisfactory feature of the work was that many girls who failed badly in attempting elementary questions had been allowed to go on to Permutations and the Binomial Theorem.

In many cases the new syllabus in *Physical Geography* prepared for this subject had apparently not been studied. There was little evidence of the direct observation of natural phenomena: for example, while the movements of the moon (not asked for) were often correctly shown by a diagram, its appearance to an observer was almost always wrongly represented. The answers to questions on maps seldom gave any indication that the writers had had any practical experience in drawing them.

Junior Candidates.—The answers of Juniors in the *Old Testament* subjects often betrayed confusion of ideas: for example, the crossing of the Red Sea was often confounded with the crossing of the Jordan; and what was much more serious, the Saviour's name was introduced into the events of Old Testament history. The question which dealt with places was badly answered.

The explanation of detached passages from "As You Like It" was usually given in the language of text-books, and aimed rather at supplying information about the context than at explaining the meanings of the doubtful words; and in many cases the answers were rambling and disorderly, often containing the required explanation more than once.

The work of the great mass of the candidates in *English History*, in the case of both boys and girls, showed that in their preparation too much reliance had been placed on memory, and that insufficient attention had been given to exciting interest and bringing out intelligence. The provisions of important Acts of Parliament were often given correctly for the most part, but with some curious perversion which proved that the writer had no real understanding of their meaning, and indeed did not know what an Act of Parliament was. In a large number of cases questions which asked for the effect of certain proceedings or the arguments for and against certain courses of action were evaded rather than answered: the candidates gave a narrative of the surrounding circumstances, but made no attempt to trace the connection between cause and effect or to weigh the reasons on either side in a constitutional dispute. A good deal of wild writing was evoked by the request for information as to the way in which England acquired the principal colonial possessions she held in 1688.

Great ignorance was shown, in the *Geography* papers, of the forms and extent of the great oceans and of ocean distances; it should be remembered that our water-ways are of supreme importance, and that, therefore, the teaching of geography should not be confined to the study of continents and countries. It was evident, too, that at several centres sufficient time had not been given to geography, only a very superficial acquaintance with the subject having been acquired, but these instances were perhaps fewer in number than in former years.

The work in *Latin* accidence, on the whole, seemed to be inferior to that of the preceding year, and there was more than the usual carelessness in reading the questions, singulars being given for plurals and *vice versa*, supines for infinitives, genitives instead of genders. The declension of substantives was done worse than any other part of the accidence, substantives being often declined as adjectives of three terminations. There was some guessing at the genders. The comparison of adverbs and adjectives was bad; the numerals were known a little better, but too much French is still given instead of Latin.

In the passage chosen for the easy unprepared translation into Latin, errors were due to a weakness of vocabulary, a confusion between words of similar appearance or sound, and a neglect, in

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many cases, of the most elementary rules of syntax.

In dealing with translation into *French* of the passage of continuous prose, too many candidates evinced signs of carelessness in the use of prepositions, the gender of substantives, and the distinction between the imperfect and past definite tenses.

On the whole, some excellent work is being done in *German*, but the Examiners would impress upon teachers the necessity of paying more attention to the elementary accidence. There seems to be too great a tendency to "push on," and too universal an idea that the best way to learn a language is through the medium of translation into the native tongue. Undue attention appears to have been given to the preparation of the set books, to the neglect of grammar and composition.

In *Algebra* the principles involved in the reduction of fractions were very imperfectly understood by a large proportion of the Junior candidates, many of whom appeared to think that + and —, 0 and 1, were interchangeable at will. In the more advanced part of the paper the most noticeable weakness was the want of care shown in the attempts at the easier questions; for instance, in the easier of the two equations the cross-multiplication yielded a strange variety of results, and in the question on Progressions the common difference and common ratio were given incorrectly in a large proportion of cases. At many centres candidates had evidently been taught Combinations and the Binomial Theorem before having mastered the more elementary subjects.

The Examiners in *Experimental Science* say that it would be a good thing if teachers would return to their pupils the results of their experimental work some time after the experiments have been performed, and ask them to explain what they meant. They might learn in this way to write down a complete statement of the observations made. In the present examination the candidates were asked to make a solution of salt and to determine its specific gravity: a large number omitted to state what quantity of salt they had used.

Preliminary Candidates.—Great ignorance was shown of the passages from *Holy Scripture* set for explanation: this seemed to point, the Examiners say, to the fact that text-books had been studied rather than the Bible itself. Many of the candidates narrated miracles and parables almost in the words of the Bible, but several described similar incidents not recorded in the chapters set, while not a few failed to distinguish between miracles and parables, speaking of "the Parable of the Ten Lepers," and narrating the cursing of the barren fig-tree instead of the parable.

The fact that accurate definitions in the *English Grammar* answers were often followed by inaccurate examples would seem to show either that too great trust is often placed in mere memory-work or that many teachers have not yet grasped the importance of the principle of connecting rules with examples.

The parsing in the *French* papers was very unsatisfactory; the candidates appeared to know the technical terms of grammar without being able to apply them correctly. The composition was as bad as could be.

The weakest point in the *German* answers was the accidence, extremely few of the candidates showing any knowledge of the commonest irregular verbs, and few being able to translate simple English phrases or sentences into correct German.

THE GULF-STREAM FALLACY IN PHYSICAL GEOGRAPHY.[1]

THERE are few things more curious to-day than the deference paid in educational circles and in the newspapers to exploded theories as to climate and weather causation. Of all cases of adherence to the old beliefs, the abandoned camp of an earlier, cruder science, the remarkable deference paid to the Gulf-stream theory of climate is particularly a case in point. This comes naturally from the failure to grasp the essential facts of the atmospheric circulation in the north temperate zone. Though the theory still persists that the Gulf Stream alone by its own inherent warmth causes the mild climate of north-western Europe, and though it is still referred to in a familiar off-hand manner by school teachers in teaching physical geography and by writers who ought to know better, yet most people seem unfamiliar with the broader restatements of the problem now made by meteorologists.

By itself alone the Gulf Stream has as much effect on the climate of north-western Europe as the fly in the fable had in carrying the stage-coach up the hill. The mild climate of north-western Europe is due not to the Gulf Stream, but to the prevailing eastward and north-eastward drift of the circumpolar atmospheric circulation, the aërial currents of which, and not the Gulf Stream, distribute the heat conserved by the whole Atlantic Ocean north of latitude 35° (roughly) over Europe. The entire surface of the Atlantic Ocean north of the region of the trade winds, or rather north and west of the centre of the great North Atlantic anticyclone, is drifted to the north-east by the prevailing aërial drift, which drift, and not the ocean currents, carries the beneficent influences of the ocean over the European islands and the shores to the east and north-east. The Gulf Stream, itself a result of wind motion, being produced by the joint action of the Atlantic anticyclones, is not distinguishable in temperature or "set" from the rest of the ocean by the time it gets east of Newfoundland, yet it has been given the credit that belongs to the whole mass of the Atlantic, so far as the latent power to affect climate is concerned, while at the same time the determining function played by the aërial currents of the great circumpolar drift is completely ignored. The same fallacy prevails as to the power of the Japan current to affect the coastal climate of north-western North America.

As a matter of fact, were the aërial drift, that is, the circulation of the atmosphere in the north temperate zone, to remain as it is to-day, and were by any possibility the Gulf Stream to be diverted at the Straits of Florida, no one in England would be a whit the wiser, for it is the aërial drift that has the gift of mildness in its flow. The diversion-of-the-Gulf-stream bogey may impress those who have a smattering of physiography, but it has no terror for him who knows that the Gulf Stream myth has nothing to rest on save the bad science of fifty years ago and its recrudescence in the present.

[1] Abridged from a paper by Mr. H. M. Watts in the U.S. *Monthly Weather Review*.

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Place and Date.	Fees.	Return Fares from London, 1st Class Steamer, 2nd Class Railway	Lowest Cost of "Pension" per Day.	For further information address:	Principal Subjects, &c.	Important Details.
GERMANY:						
Greifswald— July 15—August 3	20 marks - - -	Via Hamburg, 3*l.* 7*s.* Via Flushing—Berlin, 5*l.*	3 to 4 marks -	Ferienkurse, Greifswald (Prof. Dr. Siebs).	German, French and English Languages, Literature. Methods of modern language teaching. Phonetics, Pedagogy, Natural Science, History, Geography.	For teachers of both sexes. Special conversation classes for foreigners, conducted on most modern methods. All lectures given by University teachers.
Jena— August 5—17 (conversation classes continue until August 24).	Entrance, 5 marks. Each course of 12 lectures, 15 or 10 marks. Conversation classes (18 lessons and six excursions) 30 marks.	(To Weimar) 4*l.* 9*s.* 3*d.*	3 to 4 marks -	Frau Dr. Schnettger Gartenstr. 2.	Pedagogy, Natural Science, History of Art, Mental and Moral Science, Religion, German Language and Literature. Education of defective children.	For teachers of both sexes. Renowned for its course of Pedagogy. Conversation classes (elementary and advanced) for foreigners.
Kiel— July 8—27.	20 marks - - -	Via Hamburg, 3*l.* 10*s.* 6*d.* Via Hook of Hol. 4*l.* 8*s.* 5*d.* Via Flushing 4*l.* 13*s.* 8*d.* 3*l.* 15*s.*	2 marks to 2 marks 50 pfennigs.	Herr Nissen, Holtenauerstr. 38.	Pedagogy, Psychology, Ethics, History, Natural Science, Languages, Courses.	For teachers of both sexes. Arrangements will be made, if desired, for conversational classes for foreigners.
Marburg— 1st Course, July 7-27 2nd Course, August 4—24	30 marks for each course, or for both 45 marks.		2 marks 50 pfennigs to 4 marks 50 pfennigs.	Herr A. C. Cocker, Villa Cranston; or W. G. Lipscomb, Esq., Hon. Sec., Modern Language Association, University College School, London, W.C.	Pedagogy, History of German Language, German Literature, Modern History, History of Art, Phonetics, German, English, French; English and French Literature, Modern Language Teaching according to the New Method.	For teachers of both sexes. Conversation classes (elementary and advanced) for foreigners.
SWITZERLAND:						
Geneva— July 16—August 28	40 francs, and 6 francs for special conversation classes and correction of written work.	5*l.* 11*s.* 1*d.*	4 francs	Monsieur Bernard Bouvier, Bourg-de-Four 10, Geneva.	Classical and modern French Literature, French institutions, special classes for study of the spoken language, rhetoric, style, syntax and methods of teaching.	Specially intended for teachers and advanced foreign students of both sexes.
Lausanne— July 22—August 30	30 francs - - -	5*l.* 1*s.* 4*d.*	4 francs (possibly 3 francs 50 cents.).	Monsieur J. Bonnard, Avenue Davel 4, Lausanne.	Literature; Philology; Phonetics; special study of the spoken language. Methods of teaching. French institutions. History.	For foreigners of both sexes.
Neuchatel— 1st Course, July 15-August 10. 2nd Course, August 12—September 7.	25 francs - - -	4*l.* 19*s.* 6*d.*	4 francs - -	Monsieur P. Dessoulavy, Académie de Neuchatel.	General study of French Language and Literature.	For foreigners of both sexes. Elementary and advanced courses.
SPAIN:						
Avila— August 5—25	30*s.* to 2*l.* for the course.	Via Paris, Bordeaux & Irun, 9*l.* 4*s.*	27*s.* a week -	H. B. Garrod, Esq., 74, Gower-street, London, W.C., or J. Turner, Esq., County Technical Offices, Stafford.	Spanish Language and Literature.	Visits to places of interest in the neighbourhood. Conversation classes.
FRANCE:						
Tours— August 1—22*	2*l.* 2*s.*, if name is entered before July 15, otherwise 2*l.* 5*s.*	(To Paris) 2*l.* 10*s.* 3*d.* (Paris to Tours) about 14*s.* 6*d.*	6 francs - -	H. B. Garrod, Esq., 74, Gower Street, London, W.C.	French Literature, History, Language, political, social and economic aspects of France.	Under management of special committee appointed by the Teachers' Guild to promote a knowledge of the French language, customs, &c., among English people.
Lisieux— August 1—24*	As above - - -	1*l.* 18*s.*	5 francs - -	As above - - - -	As above - - - -	As above.
Elbeuf— August 1—24*	As above - - -	1*l.* 16*s.* *i.e.*, 33*s.* to Rouen and back—thence book to Elbeuf. 2*l.* 10*s.* 3*d.*	As above -	As above - - - -	As above - - - -	As above.
Paris— 1st Course, July 1—31; 2nd Course, August 1—31.	100 francs admits to both courses; 60 francs to all the lectures of a single course. Each lecture 1 franc. Each conversation class 50 centimes.		As above -	Monsieur le Secrétaire, l'Alliance Française, rue de Grenelle 45.	Classical and modern French Language and Literature, Elocution and Pronunciation. Phonetics. Institutions and Arts of France.	Elementary and advanced courses. Special courses on history of French art and institutions. Conversation classes.
Paris— Christmas and Easter Holidays.	25 francs per week -	As above - -	As above -	Monsieur Louis Jabot, Université Hall, Boulevarde Saint Michel 95; or W. G. Lipscomb, Esq., Hon. Sec., Modern Language Association, University College School, London, W.C.	Study of French in groups of three or four. Visits to places of interest in Paris; also lectures on Literature, Art, educational and social life of Paris.	Preparatory to summer courses of l'Alliance Française, and to the examination for the certificat d'études françaises de l'université de Paris.
Grenoble— July 1—October 31.	30 francs for the first six week and 10 for each subsequent fortnight, or 50 francs for the whole course.	(To Paris) 2*l.* 10*s.* 3*d.* (Paris to Grenoble), 2*l.*	4 to 5 francs (possibly 3 francs 50 ct.).	Monsieur Marcel-Reymond, 4, Place de la Constitution.	French Language and Literature. Elocution and Pronunciation. Phonetics. Special study of spoken language. History of Art. Political, Social, Economic aspects of France.	Visits will be made to places of interest in the mountains of Dauphiné for foreigners of both sexes.
Nancy— December 1; April 1; and August 1.	40 francs for 40 lessons in elementary course; 20 francs for 20 lessons in advanced course.	Paris to Nancy and back, 2*l.* 3*s.*	4 to 5 francs -	Monsieur I. Gavet, rue des Tiercelins 46.	Classical and Modern French Language. Literature, History and Institutions of France.	Preparation for the examinations of the Alliance Française.
Caen— April 9—July 1 or 30—August 1—30.	1*l.* for one week, 1*l.* 12*s.* two, 2*l.* 4*s.* three, or 3*l.* for one month.	1*l.* 12*s.*	5 to 6 francs -	M. Lebonois, 7, rue Neuve-Bourg l'Abbé, or Walter Robins, Esq., 9, Northbrook Road, Lee, S.E.	French Language and Literature. Political and Social aspects of France. Special study of spoken Language.	For foreigners of both sexes. Conversation and reading classes.

* These dates are given subject to alteration; the exact dates will be found in the "Teachers' Guild Handbook," to be published at the beginning of May.

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PROGRAMMES OF FOREIGN HOLIDAY COURSES FOR 1901.

IT is becoming increasingly common for teachers to spend part of their holidays abroad with a view to improve their knowledge of foreign languages. One result of this is that every year sees an increase in the number of places where such study is facilitated by means of the special arrangements made by the local educational bodies to enable British visitors to secure the greatest advantage from the short time at their disposal. The Special Inquiries Branch of the Board of Education has tabulated the particulars concerning all such courses which have been arranged for this year, and the table is here reprinted (p. 178) in a slightly modified form.

The table is only intended to serve as a guide to students, and further details should be obtained by directed communication with the secretaries, whose names are given in the table. No student should attend an advanced course who has not some knowledge of the spoken language in which the course will be delivered. And all who take part in the courses are strongly advised to avail themselves of opportunities of enjoying social intercourse with foreign students. Experience has shown that in many cases, through associating too exclusively with visitors of their own nationality, students have missed much of the advantage which they would otherwise have gained from the courses.

PENS AND PRINTING FOR USE IN SCHOOLS.[1]

Pens and Penholders.—Believing that the matter of writing pens is a most important one for students, I have, during the past two years, made a test of all the pens I could secure, with a view to ascertaining their energetic effects upon myself and my assistant. While, doubtless, I have not had opportunity to examine all the good pens made, I yet feel that of those commonly in use the one of medium point requiring the least waste of energy in needless tensions is the Gillott, No. 1065. It has been my experience, however, that the ordinary gold pens are far more satisfactory than those made of steel, since the point moves over the paper more smoothly, requiring less delicate management from the penman.

"Scratchy" pens cannot be too severely condemned. Aside from their irritating influence upon the nervous system, they require such careful handling that waste of energy cannot be obviated. I have never known a person to write long with such an implement without manifesting fatigue in body and mind. Students who employ such articles to save expense or time in securing something better belong to the penny-wise and pound-foolish fraternity.

Another most important characteristic in a writing pen is the material of which the tip or holder is made. Metal holders are very common, although, fortunately, only about six per cent. of our students employ them; the others use either rubber or wood holders, or fountain pens. It may, perhaps, be worth saying, for the benefit of the benighted six per cent., that they have adopted a most efficient plan for wasting their vitalities. When the fingers grasp a metal surface perspiration accumulates quickly, and if it be round it will tend to roll in the fingers. In order to keep it in proper position there must be increasing tension, which, as anyone may by trial prove to his own satisfaction, is a potent agency in dissipating energy. Let one who uses such a penholder exchange it for another with a cork tip, where the moisture from the fingers is readily absorbed, and he will find that too great emphasis has not been laid upon this apparently trivial matter. The principle involved applies as well to lead pencils; those with highly-glazed surfaces are difficult to keep steadily in the right position without undue constraint of the fingers. A hard lead-pencil, like a fine-pointed pen, demands relatively great co-ordinations and tensions in its control, and hence leads to waste of force.

Defective Sight.—Investigations made within the last decade in various parts of the United States and Europe show that on the average at least 30 per cent. of individuals have defects of vision which require correction by lenses. And the defects increase with age; as high as 40 or 50 per cent. of the children in the upper grades in some places have defective sight. According to Sherzer:—

"An examination of the eyes of over 5,000 school children and students in Germany, France, Russia, England and the United States has shown that, as we pass from the lower to the higher grades, there is a gradual increase in the number of cases of myopia and in the degree of the defect. The German Government in a recent examination found that in the elementary schools from 5 to 11 per cent. of the children are afflicted; in the higher schools for girls, 10 to 24 per cent.; in the Real Schulen, from 20 to 40 per cent.; in the Gymnasia, from 30 to 50 per cent., while in the Universities the percentage may run up to 88."

According to Cohn, myopia increases rapidly with age in the German schools. "In the Real schools the myopia percentages from the sexta to the prima were 9, 16·7, 19·2, 25·1, 26·4, 44; in the Gymnasia, 12·5, 18·2, 23·7, 31, 41·3, 55·8." Professor Swift's researches seem to indicate that nearly every student examined had some visual defect. Investigations in the schools of Sioux City, Iowa, show something like 50 per cent. of defectives in the highest grades. In Rochester, New York, 31 per cent. of the children in the high schools have defects of vision which could be detected without any expert examination. And so it goes. Prentice, Cohn and others have recently shown beyond a doubt that no individual can afford to go through life without ascertaining the condition of his eyes, and yet forty per cent. of our students report that they have never had their eyes examined. It would, indeed, be a remarkable circumstance if there was not stealthy thievery of nervous energy taking place constantly in a number of these cases.

Types for School Books.—For the most part the eye has been used throughout racial history in discerning relatively large objects and those at a distance. It has been only within the most recent period that such visual co-ordinations have been required as are necessitated in our day in the reading of print. Authorities agree that a child of five or six, for instance, has not developed the visual capacities to read ordinary print with safety. When a child of this age is set to studying a primer printed in the type that such books usually are, or at least have been in the past, he not only suffers great strain, but injury is apt to result to the visual organ. Now it is probable that even in adult life the reading of fine print requires co-ordinations of ocular muscles which result in dissipation of nervous force. Cohn, Sanford and others have calculated the size and shape of letters which can be read with greatest ease. Burnham summarises the results of investigations upon this subject in an excellent way, and his words may be quoted:—

"(1) *Size of the Letters.*—It is necessary that type be easily legible at a distance of twenty inches. For this it is necessary, according to Dr. Cohn's estimate, that the letters be 1·5 mm. high. 'Any type that is smaller than 1·5 mm. is injurious to the eyes.' An angle of five minutes is sufficient for the recognition of a

[1] Abridged from a paper on "Aspects of Mental Economy." By Prof. M. V. O'Shea, Professor of the Science and Art of Education in the University of Wisconsin, Madison, U.S.A. (*Bulletin* of the University of Wisconsin, No. 36, 1900.)

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letter; hence, according to the estimate of Dr. Weber, a healthy eye can read clearly a letter ·7 mm. in height without extreme convergence. But such reading is very laborious. Weber tested the time occupied in reading with different types. When the size of the letters was greater than 2 mm., he found that the speed of reading was retarded. He decided for a minimum of 1·5 mm. Eulenberg and Bach demand still larger type for the lower classes. Many of the school books in common use have much smaller letters than Weber's minimum. In some of the school atlases letters only ·5 mm. in height are used. Many very beautiful maps also have very small type. Especially before pupils have become familiar with the letters it is necessary to have large type. Javal wishes to have it determined by experiment how large the type should be in the different classes in order that no pupil, however bad the light, need bring his eyes too near the book.

"(2) *The Thickness of the Letters.*—'No print, of which the down stroke is thinner than 0·25 mm., should be tolerated in school books' In Latin type the corners of the letters should be strengthened in order to make them appear rectangular, otherwise by the irradiation of the white ground they appear rounded off.

"(3) *The Shape of the Letters.*—Javal points out that, if the lower half of a series of words be hidden from view, it still is easy to read them; but when the upper half is covered it is difficult, almost impossible, to do so. In reading we glance along the line at a little distance above the centre of the letters, and the letters *g*, *j*, *p*, *q* and *y* are the only ones that come below the line. Thus the upper parts of the letters are of special importance. As the result of an extended research, Dr. Sanford found several groups of letters in our alphabet that are relatively poor. Of the small letters *c*, *e*, *o* are confusable with one another; *a*, *n* and *u* are poor letters, and *s*, *i*, *l*, *t* are liable to cause confusion. Javal, Cattell and Sanford have each suggested changes for improving the form of some of the worst letters. Among the most important of these are Javal's suggestion that letters be made broader and that we return to the more open forms of *c*, *e*, and *o*, and Sanford's suggestion that a letter in the shape of an inverted *v* or of a small cap. A might be substituted for our present small *a*.

"(4) *The Approach.*—The distance between letters and words, or the approach, is important. Every letter stands out with especial distinctness, when the space between two letters is wider than the space between the ground strokes of the letter. For this reason words are emphasised in German by spacing the type. This greater approach adds to legibility. School-books should have an approach of nearly 1 mm.

"(5) '*Leading*' *is Important.*—'A book has good interlineage,' according to Dr. Cohn, 'when, if the letters are 1·5 mm. high, the lines are 3 mm. apart.' A distance of 2·5 mm. (1-10 of an inch) is the smallest admissible. Many of the old books had wider interlineage than is usual at present.

"(6) *The Length of the Lines.*—The shorter the line the more easily can one read. Javal thinks the long lines the cause of progressive myopia in Germany. According to Dr. Cohn, the greatest length of line should be only 10 cm. Weber would have lines from 14 to 15 cm. in length.

"Dr. Cohn resumes his rules as follows:—'In the future I would have all school authorities, with measuring rule in hand, place upon the *Index librorum prohibitorum* all school books which do not conform to the following measurements:—The height of the smallest *n* must be at least 1·5 mm. (·06 inches), the least width between the lines must be 2·5 mm. (·1 inches), the least thickness of the *n* must be ·25 mm. (·01 inches), the shortest distance between the letters ·75 mm. (·03 inches), the greatest length of text-line 100 mm. (4 inches), and the number of letters on a line must not exceed 60.'"

It is, of course, difficult for a student to alter the type of his text or reference books, and attention is directed to the matter here chiefly in the hope that those who have the choosing of such books may take this question into consideration. It is of especial significance, perhaps, to students of languages who have occasion to consult dictionaries freely.

ITEMS OF INTEREST.

GENERAL.

The chances of an Education Bill this session become more and more remote. The Duke of Devonshire has said that the Cockerton case has made it necessary for the Government to reconsider the proposals of last year, but he hoped the Bill might appear almost immediately after Easter. Mr. Balfour a day or two later was distinctly less hopeful. His promise only went so far as hoping that the long deferred Bill may be introduced either just before or just after Whitsuntide. Then there is Sir Robert Finlay's opinion that legislation during this session cannot be counted upon. It is not surprising that the number of "sick hearts" among educationists daily increases. When the man with a vote is a little keener about education, we may hope to see more enthusiasm at headquarters; but that is a long time to wait.

The School Board for London seem to have derived little advantage from their appeal in the case of Rex *v.* Cockerton. As we have already explained the points under discussion, it is unnecessary to go into details again. The arguments in the Appeal Court extended over three days. The Court of Appeal, composed of the Master of the Rolls and Lords Justices Collins and Romer, delivered their deferred judgment on April 1st. After an exhaustive review of the provisions of the numerous Acts dealing with elementary education, the Master of the Rolls said it was not within the powers of a Board as a statutory corporation to provide science or art schools, or classes of the kind referred to in this case, either in the day schools or in evening continuation schools, out of the School Board rate or school fund; and that the rule *nisi* should not be made absolute in regard to any of the disallowances and surcharges, for they were correctly made by the auditor. If the School Board is to have the powers it seeks, these must be obtained by legislation, for the powers it desires to have do not exist in any statute or its equivalent already passed. The appeal was disallowed with costs.

It was to be expected that the Association of Technical Institutions would have the subject of higher-grade schools brought prominently before it at the recent annual meeting. Sir William Hart Dyke, who succeeds Sir Swire Smith as president of the Association, and has been largely responsible for the establishment of schools which are now declared to have been illegally supported by the School Board rate, found a justification for such schools in the neglect of successive Governments of both political parties to fill up the gap between primary education under the Code and the higher branches. Co-ordination is now the watchword, and it is to be comprehensive enough to join all the educational forces of the country, whether higher grade schools, secondary schools, private schools, voluntary schools, or any other places where efficient work is being carried on.

The need for the organisation of educational effort is obvious, and it is perhaps just as well that the sphere of influence of

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School Boards has been questioned, for the excitement which has been caused by the recent legal decision is not likely to subside until an organic educational system has been constructed. Difficulties will necessarily occur, but they should not prevent the Government from producing a measure which will meet with the approval of broad-minded educationists. It is imperative that such a measure should be passed to prevent the undignified friction and competition between various educational bodies, by assigning each its plan of work in a scheme which embraces all grades of instruction. The constitution of the local authority will be the crux in many places, but the movement for co-operation of educational agencies should be strong enough to carry away any obstacles to its progress.

THE Association of Technical Institutions did not commit itself to the principle of "one local educational body for all grades of education," but it expressed approval of the main provisions of the Secondary Education Bill of last year, and hoped that the new measure promised by the Government would deal with the overlapping and competition between the educational work of School Boards and County Councils. Other resolutions adopted by the Association referred to the lack of representatives of technical education upon the Consultative Committee of the Board of Education, and the conditions upon which group diplomas or certificates should be granted in subjects bearing upon specified industries.

WHAT are the precise functions of a School Board? is a question which has yet to be completely answered. One of the latest problems is this:—Is it the business of School Boards to teach English to foreigners gratuitously? A case has recently arisen in one of the London Board schools. It appears that a young Italian girl of sixteen years of age has been admitted into the third standard of an elementary school, among children of an average age of ten, so that she may learn English. The young lady is presumably ignorant only of English, not of the other branches of human knowledge with which one is supposed to be acquainted at her age. For the present the girl is to enjoy the advantages of free education, since a motion to exclude her was rejected by the meeting of the Board at which the subject was discussed. The question arises whether an English youth, with a similar amount of enterprise, could get instruction, on the same moderate terms, if admission for a similar purpose were sought to a foreign primary school.

THE Liverpool Technical Instruction Committee devoted about one-thirteenth of the amount received from the Local Taxation grant for last year to the purpose of improving the supply of secondary education in the city. We learn from the last report of the Committee that they are in communication with the Board of Education with a view to having the secondary schools thus aided examined by the Board of Education under the provisions of the Board of Education Act, 1899. The formal account of the year's work by Mr. Hewitt, the Director of Technical Instruction, is prefaced by a short report by the Chairman, Mr. W. Oulton, who writes: "The cordial co-operation of the various educational bodies, each of which has its representation upon the Technical Instruction Committee, has continued without interruption during the year, and the consequent removal of difficulties in the work which might, with isolated and perhaps unfriendly action, have otherwise arisen, encourages the belief that in creating the constitution of their Technical Instruction Committee the City Council have anticipated (the) legislative Local Educational Authority." In any case such examples as that of Liverpool must carry great weight with the Government.

WE are pleased to be able to give fuller particulars of the Holiday Course at Kiel, to which Miss Cunningham directed attention in her letter published last month. The course will be held at the University of Kiel from July 8th to 27th. Fourteen series of lectures by Professors of the University have been arranged, and if there is a sufficient demand, classes for exercise in the German language will be provided. Careful arrangements have been made to give visitors time and opportunity to make excursions in the neighbourhood of Kiel. Teachers and others who think of availing themselves of the facilities thus offered should make application to Herr Nissen, Holtenauerstrasse 38, Kiel, before June 15th, and should state explicitly if they wish arrangements to be made for board and lodging, which we understand need not cost more than 28 marks a week.

THE December *Bulletin* of the New York State Library contains a review of the legislation by the different States of the Federation during 1900. The section dealing with education contains many facts which will provide British educationists with food for reflection. We only have space for a few examples. One law of Ohio enacts that any township voting to abolish all sub-districts and centralise the schools must furnish means of transportation for all pupils living more than three-quarters of a mile from the central building. Another law of the same State secures to each child the benefit of a high-school education by providing that in districts where there is no high school the Board of Education shall pay the fees of pupils attending the high school of an adjoining district. In New Jersey corporal punishment is forbidden in all cases. In the latter State also the school medical inspector must, at least once a year, examine every pupil to learn whether any physical defect exists.

THE ninth congress of the Société des Professeurs de Français en Angleterre was held at Reading College on April 19th and 20th, under the presidency of Principal Mackinder. After the reception of the French Ambassador and the members of the Congress by the Mayor and Corporation of Reading, they were entertained at luncheon by the Mayor and Mayoress. The first day's meeting was given up to addresses by the French Ambassador, by Monsieur Beljame, Delegate of le Ministre de l'Instruction Publique, Paris, and by Monsieur Brunot, Delegate of l'Alliance Française, and by the President of the Congress. The second meeting was opened with an address by Professor York Powell. Throughout the Congress a series of important resolutions were discussed, all of them concerned with the teaching of modern languages.

WE have received a copy of the first number of the third volume of *The Birmingham Magazine of Arts and Industries*, which "is designed to show the world what Birmingham is doing, has done, and may do." Among other things, the periodical undertakes to show "that the people and products of Birmingham are amongst the most interesting and artistic in the world." Whether this be true or not, one thing is quite certain, that this enterprising midland city has a right to be proud of its educational facilities. The number of the magazine before us gives a beautifully illustrated account of the nine excellent grammar schools of King Edward the Sixth situated in different parts of the city. The 348 years of the history of this foundation are briefly described, and short notices of the present Headmasters and Headmistresses of the various schools are included. But the most attractive characteristic of the publication is certainly the excellent series of photographs of schools and school teachers which is brought together. Every Birmingham man will, we should think, buy a copy of the paper.

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On the occasion of appointing General Vannovsky to be Minister of Public Instruction, the Tsar of Russia said, we learn from the *Times*: "The regular organisation of popular education has always formed one of the chief cares of the Russian rulers, who have striven, surely but gradually, to perfect it in accordance with the fundamental principles of Russian life and the requirements of the times. The experiences of recent years, however, have shown the existence of defects so material in our scholastic system that I think that the time has come to undertake an immediate and thorough revision and improvement." Judging from recent reports which have come before us, there is in Russia, as in our own country, considerable room for improvement, and it is to be hoped that the new Minister will prove worthy of the Emperor's high estimate of his capabilities.

We commend to the earnest attention of our readers an address entitled "A Plea for Knowledge," prepared by the late Dr. Creighton, which he had intended to deliver at the Midland Institute, Birmingham. It is printed in the April number of the *Contemporary Review*, and is characterised throughout by that large-minded sanity which was so conspicuous among the many endowments possessed by the Bishop. "My opinion is that the great defect of England at present is an inadequate conception of the value of knowledge in itself and of its importance for the national life. I wish to see this remedied; and it cannot be remedied till it is recognised. It will not be amended by improvements in our educational system, for systems are only so much mechanism, and depend on the force which works them. If there is a desire for knowledge, it is not difficult to find out proper means of imparting it. If there is little effective desire for knowledge, the invention of easy means for imparting a beggarly minimum will check rather than promote the desire." Perhaps the most urgent need which the paper makes clear is the necessity there is for Englishmen to give up their pride in their eclectic amateurism, and to endeavour to become active experts.

Sir Joshua Fitch contributes to the April number of the *New York Educational Review* an article on recent educational progress in England. He succeeds in giving a very impartial account of the chief developments which have taken place in English education during the closing years of the nineteenth century. There is still a considerable want of unanimity as to what is meant precisely by "technical education." It would be difficult to say how many definitions have been put forward during the last ten years. Huxley said, in 1887, "It passes the wit of man, as far as I know, to give a legal definition of technical education"—words which the Act of two years later substantiated in a remarkable manner. Though Sir Joshua cannot be said exactly to define it, he certainly attempts to indicate what it means. He says it "describes a particular kind of practical discipline which enters in its due proportion into every department of instruction, from the kindergarten to the high school and to the university. It includes manual and visual training, some practical knowledge of physical science, and the application of science to industry, and to the enrichment and the enlargement of the resources of life." This is true enough, so far as it goes, but unless the workman gets something else as well, his technical education is still unsatisfactory.

We are glad to direct attention to the excellent work which is being done by the Southampton Geographical Society. The objects of the Society are to acquire and diffuse geographical knowledge in Southampton and the surrounding neighbourhood by lectures, by special prizes, by forming a circulating collection of geographical apparatus, and by promoting the publication of a set of maps for the study of the local geology for use in schools. The last report which has reached us shows that its promoters have met with very substantial success. The geographical object-lessons in the field which have been inaugurated by the Society for the benefit of teachers might be copied with advantage in every large town. Their enterprise has recently taken a new direction, for the report shows that the Society has offered two prizes of the value of £15 and £10 for the two best studies of the geography and history of any rural parish (ecclesiastical) in Hampshire, including the Isle of Wight, by teachers in public elementary schools in that district. A year was given in which to make the necessary research and to write the 7,000 words required in the monograph, and a very helpful scheme for the guidance of the competitor is provided. We advise teachers of geography to obtain a copy of this report. It is published by Messrs. Warren & Son, 42, Above Bar, Southampton, and costs sixpence.

The Education Code was presented to the House of Commons on March 28th, and became law on April 27th. The Higher Education Minute has now been introduced into the body of the Code, but with a few minor alterations. For instance, a child proposed for admission to such a school must be not less than ten years of age at the date of admission; pupils who are receiving instruction in an elementary school at the time of its conversion into a higher elementary school may remain, with the sanction of the Board of Education, even if they are already fifteen years old. As a rule the number of pupils in schools of this character will be limited to 300. We are glad to see there is a relaxation in the course of preparation for pupil teachers. In future, examinations other than those of the Board of Education may be taken as an alternative to the King's Scholarship examination, in order to qualify for admission to a training college. Beginning with 1902, there will only be one examination a year for pupil teachers, and that will take place in the spring. Candidates for the "Certificate" of the Board of Education will, from this year, only be expected to pass one examination, which will be equivalent to the old second year's examination.

The thirty-second Annual Conference of the National Union of Teachers was held at Great Yarmouth during Easter week. Mr. J. F. Blacker, the president for the year, in a temperate and thoughtful address, dealt with the subject of "hooliganism," and examined some of the ways in which its eradication may be possible. Dealing with the religious instruction of the children of public elementary schools, he rightly emphasised the value of the teacher's example. "He who lives religiously teaches, although he may not talk, religion, and in dealing with childhood there is urgent need for this silent teaching." Mr. Blacker combated the idea that the National Union was a trade union. It is sufficient, he said, to consider the number of "Article 68" teachers in elementary schools and the difference of salaries in board and voluntary schools to disprove this idea. The need for an open inspectorate and for freedom in the profession of teaching were also vigorously maintained.

It would be difficult to name any aspect of the elementary school teacher's work which was not discussed at the subsequent meetings. The presence of the three members of Parliament numbered in the membership of the National Union served in a large measure to keep the discussions within proper limits, and the presence of delegates from other countries went a long way towards ensuring a broad-minded treatment of their subjects on the part of the speakers in charge of the chief resolutions. It is unnecessary for us to refer in any detail to the numerous questions considered. But of the value of meetings of this kind there can be no reasonable doubt. There is little

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fear that the all-important subject of national education will be allowed to retire into the background so long as the National Union of Teachers preserves its vigour. How long will it be before there is an equally representative body of secondary schoolmasters and schoolmistresses holding a corresponding conference every year?

MOST of the games in the Inter-school Chess Correspondence Tourney are rapidly approaching completion. Three games have already been finished; the secretary of the Bishop's Stortford school has sent the Chess Editor the moves of three games that his club has won against King Edward's School, Birmingham, Friends' School, Saffron Walden, and New College, Harrogate. These are the only games that have been decided. Play recommences on May 20, after the holidays.

SCOTTISH.

THE Scotch Code for 1901, which has just been issued, contains few material changes save in regard to Drawing. The syllabus for this subject has once again been thrown into the melting pot, and the new schemes which teachers were beginning to know and appreciate have given place to newer ones. Free-arm drawing, which for some years has been an interesting feature in many infant rooms, must now have a place in all departments of the school. It is rather remarkable that, just as the Scotch Education Department has awakened to the importance of this method of Drawing, the United States, which was the cradle and nursery of the system, has discarded it, and gone back to the old-fashioned free-hand.

THE Glasgow Chamber of Commerce has appointed an Education Committee, with power to grant, in the name, and with the seal, of the Chamber, diplomas or certificates of proficiency in those subjects deemed necessary for youths going in for a commercial career. The examinations will be entirely under the control of the Education Committee, and will be conducted by examiners appointed from time to time by this Committee. The success of this experiment rests entirely with the merchants themselves. If they rigorously insist that youths entering their establishments shall possess these diplomas, schools, willingly or unwillingly, must supply the type of education required to obtain them. But this specialised education they cannot have cheap, and merchants have to be educated up to the knowledge not only that education pays, but that it must be paid for.

THE Council of the Senate of Cambridge University have had under consideration the question of altering the Regulations relating to the conditions of exemption from the Previous Examination by the Leaving Certificates of the Scotch Education Department. At present candidates seeking to obtain exemption by means of such certificates are required to give notice to that effect when they enter as candidates, and their papers have to be submitted to the Schools Examination Syndicate on whose recommendation they may be accepted as affording exemption. The Council recommend that in future the Higher Grade Certificates of the Department be accepted *pro tanto* without the papers being submitted to the Examination Syndicate, provided that the Department is willing to furnish to the Syndicate, at any time when requested to do so, copies of the Examination papers with a statement of the standard adopted.

AT an exhibition of physical exercises and drill by the pupils of Hillhead High School in the St. Andrews Halls, Sir Henry Craik emphasised the importance of giving greater attention to the physical side of education. Physical education not only builds up and braces the body, but it has powerful and lasting effects upon the formation of character. The thoroughness and the exactness which are demanded by the admirable exercises of the exhibition are the best corrective against the too common tendency to do "things something more or less," as Kipling's recruit puts it. The doing "things more or less" is fatal to success and fatal to character, and is the epitaph of most of the flotsam and jetsam of every department of life. Mac Andrew, Kipling's apotheosis of the engineer, declares that he was taught by every throb of the engines the great lessons of law, order, duty and self-restraint. These form the warp and woof of true character, and nothing is more fitted to teach them in a practical and concrete form than physical exercises. Sir Henry would like to see cadet corps established in connection with every higher school.

DR. CONAN DOYLE, in an address to the Edinburgh Burns Club on Murdoch, the teacher of Burns, paid a rare tribute to the work and worth of the Scottish dominie. "If," said he, "there is one class of men upon earth to whom Scotland owes gratitude, it is to the Scottish schoolmaster. As far back as one can trace we find these men, scholarly, earnest, conscientious, poorly paid, with no horizon in life, no ultimate reward save the recollection of duty done. We are proud of the Scottish soldier, of the Scottish colonist, of the Scotsman in many capacities; but these men labour unseen and unpraised at the very root of the national greatness, and the whole fabric of the nation is one huge monument in their honour. They have little career themselves, and yet how many a career have they shaped, and how much indirect glory have they won." This is a rare and generous appreciation, and coming from an Irishman is all the more valued. Yet, after all, it is strictly and literally true. The parish schoolmaster of Scotland for three centuries was truly the salt of the nation.

THE Governors of Gordon's College, Aberdeen, as was stated in these Notes some time ago, petitioned the Education Department to withhold their consent to the Local School Board's scheme for Science Evening Classes. Their main objection was that the Board's scheme contained features which would re-act injuriously on the Science and Art classes in Gordon's College. The Department have now issued their decision on the case, stating that they see no reason to interfere with the discretion of the Board in remitting in certain cases the fees of the Science and Art students in their classes. The Department further urge upon the Governors and the School Board the advisability of appointing a standing joint committee of both bodies for the purpose of organising Science and Art instruction in Aberdeen on one complete and consistent scheme. The starting point for common action should be found in the fact that Gordon's College is the natural centre for advanced instruction in subjects of Science and Art, while the more elementary work might well form the province of certain selected evening Board Schools.

THE General Council of Glasgow University, at their statutory meeting, adopted the report of their Committee which was considering the Arts Ordinance, and in particular the serious handicap placed upon Modern Languages at the Bursary competitions. This report is the sanest and most judicial deliverance on the vexed question of the respective values of the Ancient and Modern Languages that has yet appeared. The Committee was composed almost entirely of eminent Humanists, such as Professor Phillimore, Professor Denny, &c., yet they have issued a report which is absolutely above the prejudices of custom and professional feeling, and is an unanswerable plea for the equal treatment of the ancient and modern languages. They are convinced that the teaching of modern

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languages in many of the schools has now reached such a stage that a training in French or German, or both, can be given which is just as substantial, strong and useful in training as any other that is given in the same period. The Committee recommend that the number of subjects be restricted to five, and that they should be grouped, and that a certain proportion of bursaries be assigned to each group. The Council resolved that the other University Councils should be approached in order that joint action should be taken on the subject.

WELSH.

At a meeting of the Anglesey and Menai Associations, Mr. Allen Croft gave some interesting figures. The two counties, Anglesey and Carnarvon, he stated, spend nearly £3,000 on purely administrative purposes before a penny can be spent on the education of the children. Anglesey spends £2 3s. 3d. per child per annum on education; Carnarvonshire, £2 7s. 5d.; the average for the English counties is £2 10s. 5d., for the Welsh counties £2 7s. 0d. Now the militiaman costs the country £15 3s. 3d. per annum, the reservist £9 9s. 3d., and the volunteer £5 11s. 4d.

The Association for the Higher Education of Women in Wales has given two scholarships for this session to women who, having already taken their degrees, are desirous of spending a further year of studies, in being trained as teachers for secondary schools, in a Welsh university college. One of these has gone to the University College of South Wales, Cardiff, one to the University College of Wales, Aberystwyth. At Aberystwyth the Council offer a scholarship of £15 a year for a student entering on training for teaching in a secondary school. The scholarship was at the beginning of this session awarded to a woman graduate.

It has recently been stated at a meeting at Haverfordwest that the average attendance at the elementary schools of Pembrokeshire is 71·5 per cent.; the average for the United Kingdom is 80 per cent., and Pembrokeshire is said to be in the unenviable position of the lowest of the counties. No doubt distances of schools affect the attendance in the county; but the people themselves are awake to the wrongness of things, and, at the meeting referred to, called on school-attendance officers and magistrates to proceed to greater rigour in the administration of the law. This may be necessary, but the rousing up of public opinion to a higher appreciation of education is still more urgent. It is reported that at this same Haverfordwest the chairman of the Governors of the Grammar School recently said that, in his opinion, Haverfordwest had distinctly lost, instead of gained, through its connection with the Welsh Central Board. This querulousness may show that things are unsatisfactory at Haverfordwest. But what we want to see is the uniting together—governors, Central Welsh Board and the public—not so much to found a system, or to assist a system, but to advance education at Haverfordwest, and everywhere else, in accordance with the real intellectual needs of the children.

At the second annual meeting of the Federation of School Boards (Wales and Monmouthshire) the question of the admittance of students into training colleges under Article 115D of the Code was discussed at length. This article allows training colleges to accept, as King's scholars, students who have passed certain academic examinations, but who may not necessarily have had any teaching experience. The consequence is, as pointed out by the Federation, that the number of pupil-teachers for whom the training colleges can find accommodation is being thus further limited, whilst everybody knows that the number of places in training colleges is grievously disproportionate to the number of pupil-teachers qualified for admission. One of the speakers stated that the number of students qualified to enter training colleges this year was 5,980, whilst the places were only 2,660, leaving a deficiency of 3,320 who are accepted by the Board of Education as qualified by their tested work to become King's scholars, but for whom there is not room in the training colleges. It was not stated, apparently, at the meeting, what the statistics are as to Welsh pupil-teachers and Welsh training colleges. The Federation further passed a resolution that "All grades of education should, in districts of suitable size, be under one local authority elected solely for educational purposes, due provision being made for safeguarding the interests of voluntary and other schools, with a right of appeal to the central authority, the Board of Education."

IRISH.

An important circular was issued at the end of March to managers and head-teachers of secondary schools, by the new Department of Agriculture and Technical Instruction. From April 1st, 1901, the administration of the grant for Science and Art for Ireland was transferred to this Board. While administered from South Kensington, the working of the grant in Ireland was most unsatisfactory. It was scarcely used at all by schools or classes, and lately the total amount earned in the whole of Ireland was only about £4,000 annually. It is believed that this failure was largely due to the arrangements being unsuitable to Irish conditions, and the new Department, after making various inquiries among the schools, issued a month ago their circular sketching the new arrangements they propose to make. They invited the managers of the chief secondary schools both for girls and boys to meet the heads of the Department and the Assistant-Commissioners of Intermediate Education at a conference in Dublin to consider the proposed arrangements. Considerable criticism was offered at the conference, and the circular has now been issued in an amended form.

Grants are payable only on students over 12 years of age. The subjects are Experimental Science, *i.e.*, "such a system of instruction in Physical and Natural Science as will involve the greater part of the work being done by the pupils themselves in an approved laboratory," Drawing, Manual Instruction and Household Economy. The minimum number of hours must be three for Science and one for Drawing per week. The smallest course possible shall be Drawing and Experimental Science. If more than six hours per week are given to these subjects, Manual Instruction or Domestic Management must form part of the course. Schools can submit schemes for teaching all the subjects for the approval of the Department. The first year must in Science be devoted to Elementary Physics, the second chiefly to Chemistry. After that, the pupil can take up any other branch of Physical or Natural Science he chooses. All grants will be awarded on the results of inspection. Minute rules are laid down as to attendance hours, appliances, laboratories, and the qualifications of teachers. The arrangements are all tentative and subject to alteration.

One very important matter is that the Intermediate Board have adopted this Syllabus for Science and Drawing, and it will supersede their own present courses in Natural Philosophy, Chemistry and Drawing. Moreover, after this year the Intermediate Board "shall not hold any examinations in this subject (*i.e.*, Science and Drawing), but shall accept the inspection, and where necessary the examination of the Department." This will simplify the work of schools, as there will be only one science and drawing programme; but by what method the Intermediate Board propose to give grants to schools on these

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subjects and credit to pupils in the examinations is not yet explained. The arrangements of the Department detailed in this circular are regarded as skilful and satisfactory so far as they can be judged before being put into practice.

THE Annual Congress of National Teachers was held in *Dublin* in Easter week. On the whole satisfaction was expressed with the new scheme of the National Board, although objection was offered to some of the changes affecting the status and payment of teachers. The most important subject brought forward was the necessity of compulsory education. By the *Local* Government Act of 1898 the new Rural County Councils were given powers to form School Attendance Committees, with inspectors to enforce the attendance at school of all children within certain ages. Less than a dozen, the president stated, of the councils have formed such committees, and in *some* of these scarcely any work is being done. This is largely due to the engrossment of the councils in other work; but the evil is serious, as the illiteracy in Ireland is great. Numbers of children attend no school, and the per-centage of average attendance is very low.

CURRENT HISTORY.

WE have been hearing much lately about the Clayton-Bulwer and the Hay-Pauncefote treaties between Great Britain and *the* United States of America. Both these countries have interests in Central America, specially in connexion with the proposals to make a canal, whether the Panama or the Nicaragua, to connect the Atlantic and the Pacific Oceans in another way than that which Nature has provided at both ends *of the* American Continent. For the old problem has long been solved which for so many years puzzled the early explorers of the New World. Probably few of our readers have ever made a coasting voyage, and it is difficult for those who have never had that experience to realise the inevitableness of the *ignorance* of early explorers of an unknown land. But for many years after Columbus' times any opening in the coast of America was thought to be possibly a way through to the ocean beyond, which had been seen and even sailed on but which could be reached only by an overland route, or by braving the dangers of "the Horn." The problem of the "north-west passage" was only the survivor of many slowly-solved questions as to a connection between the two oceans.

IMAGINATION works largely, of course, in all matters of invention and discovery, and a useful object it serves. It is only shallowness which blows up the conceit of those who are wise after events. Therefore, in studying old maps, we may smile, but it must not be with superior wisdom, at descriptions which magnify what we know to be river mouths into straits leading to large seas occupying the whole site of the United States. At last, as we have said, the problem was solved. Not only had Columbus not reached the coasts of India, it had not been physically possible for anyone to have reached them by pursuing the course he took. The West Indies are those which are reached by going west, by way of contrast to those which are "arrived" by going east. They are not the east coast of the country of which we knew the west. But with the growth of modern science we have grown bolder. Since Lesseps proved, in the face of a sceptical world, that a canal could be made, and maintained, through the shifting sands of a desert, it is now thought not impossible to make a canal anywhere, and since Nature bars the way in Central America, then to pierce Nature and force a way through.

"JAPAN.—A satisfactory compromise between the Peers and the Ministry having proved impossible, the Emperor intervened. Having summoned the President of the Upper House, he intimated his Imperial desire for the passage of the taxation Bills. The Peers unanimously bow to the Sovereign's command, and have indicated their intention of passing the Bills." —*Daily papers.* "His Majesty (George III. of Great Britain) allows Earl Temple to say that whoever voted for the India Bill was not only not his friend, but would be considered by him as an enemy . . . The King's tactics prevailed."—*Erskine May: Constitutional History* (*an.* 1783).

BORIS, the heir-apparent to the Principality of Bulgaria, has been seriously ill. Five years ago, when he was two years old, he was "converted" to the Orthodox (*i.e.*, the Greek) Church. If he were to die, it would, say the papers, be more difficult to convert his brother Cyril than it was to convert Boris. Let not the unwary reader suppose that Bulgarian princes are theologically precocious or that these youngsters even know as yet the differences between the "Roman" and the "Greek" varieties of Christianity. Bulgarian politics are supplying us with a further illustration of the late Professor Seeley's dictum, that events turn upon religion, but it is politics that does the turning. Austria-Hungary and Russia have been rivals in the Balkan peninsula now for nearly two hundred years. Ever since the Turks were turned back from Vienna in 1683, these two powers have more or less controlled events in the Balkans. The first partition of Poland was due to their rivalry, and much curious illustration of their politics may be found in the history of the relations between Catherine II. and Joseph II. towards the end of the eighteenth century. Great Britain, too, is a party, to this part at least, of the Eastern Question.

A NEW FRENCH GRAMMAR.[1]

THIS is a new volume in Dent's Modern Language Series, edited by Prof. Walter Rippmann. Few even among professed modern-language scholars can afford to disregard a book like the one before us. It is a solid piece of work, carefully compiled and provided with a good stock of examples illustrating many subtle distinctions which are not found in most grammars. There are two features in the arrangement of the subject-matter to which Prof. Rippmann directs special attention in the preface—"Accidence and Syntax are treated together, modern usage and that of the seventeenth century are separated." The separation of present-day usage from that of the age of Molière deserves unreserved praise, but it should be rigorously carried out. The blending of Accidence and Syntax will cause no inconvenience to those who can use this book with real advantage, viz., *advanced* students of French. Indeed, for them only is it at all suitable, and therefore we consider that the word "School" ought to have been omitted from the title, for even in the highest forms of secondary schools the present volume could hardly be used as the book from which grammar is to be *learnt*. It is far too full for school boys and girls. The numerous examples given to illustrate syntactical points are, as a rule, without English translations. This seems to us a mistake in a grammar intended for school use, especially when many of these illustrations contain difficulties which a sixth-form boy would not always overcome even with the help of a dictionary.

Again, the matter is so compressed that the most important things do not readily catch the reader's eye, in spite of the

[1] "Dent's School Grammar of Modern French: with special sections dealing with the Language of the Seventeenth Century." By G. H. Clarke, M.A., and G. J. Murray, B.A. (London, J. M. Dent & Co.) 1900. 3s. 6d.

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evident endeavour to obliterate this defect by marginal headings. Finally, we hold that it is not desirable to insert in a school book forms and constructions which should *not* be used or which are *not* to be recommended or are obsolete. Otherwise the examples are thoroughly up to date. We have "la divine Sarah" as well as "l'affaire Dreyfus" to illustrate French grammar.

In point of detail we would call the authors' attention to § 170, where the figure of the reference to § 223 is omitted. § 231, occurs *dégrés*. § 246, *grasseyer* always keeps *y*. In §§ 250 and 253 the *Passé antérieur* is called Anterior pluperfect, elsewhere, § 244, 261, 267, Anterior perfect. As English terms are used for the names of tenses, why not "Past definite" for *Passé défini?* § 252, *cueillerai* and *saillera*, add that compounds of *cueillir* do the same, but not the compounds of *saillir*. § 304, Jordain. § 285 (was alive) is apt to be misunderstood. § 62, "*gens*" meaning "nation," and § 15, the use of *force* (*avec force signes de croix*) had better be counted obsolete. Expressions like *un tendron*, and words like *hongre*, *bouveau*, *verrat*, *bique*, *hulotte* (§ 60), *maigrichon*, *métis*, *grivois*, &c. (§ 100), *chauvir*, to prick the ear (only used of asses and mules) §255, and others like them, ought to have no place in a school grammar. See also § 91, the complement of *faire laisser*, *é* is put in the dative. The principle of § 55, referring to the best way of learning the genders of French nouns, is not carried out; in § 93 viii. it would be a distinct help to the learner if the article had been inserted with each noun. § 251, *saillir* = *jaillir* is misleading. § 289, "it was" and "was to learn" are not correct. § 255, 25, *gésir*, the *s* is pronounced voiceless, as in "lesson"; surely not. Similarly, in § 3, *brûler* (the *û* is short) is incorrect.

In conclusion, we regret that the authors have not given an adequate account of modern French phonology, which a students' grammar ought to contain. Instead of it we have as an appendix the now famous *Arrêté*, of which Brunetière has pointedly said, "*Voilà, ma foi! de la belle ouvrage!*"

A HISTORY OF THOUGHT.[1]

This book differs from the ordinary histories of philosophy in being more historical and less philosophical. We do not imply that it is less accurate, or shows less of the philosophic spirit; but merely that it concerns itself more with thoughts and essential theories than with the accessories, those elements which were due to time or place or idiosyncrasy. It might be called a History of Thought, because, in fact, poets, physicians, historians, every one, in short, is taken into account who contributed in any way to the guidance or the emancipation of thought. The healthy joy and innocent simplicity of the Homeric outlook on life finds a place here as much as the trained observation of Hippocrates or the intuitions of Democritus. With much acuteness Prof. Gompertz traces the workings of individual minds, showing us now a flash of positivism in the simplicity of Herodotus, now a great principle emerging from the childish nonsense of Empedocles' theory of vision. And it is this keen penetration of the author's which gives this work its remarkable interest. He is skilful to extract a meaning from unpromising materials, and to show how (for example) Anaxagoras, for all his wrong application of it, did hit on the principle of universal law; or how the grandeur of the Orphic system stands clear of the unlovely mythology which it brought with it. Another point of interest is the honour paid to forgotten or neglected greatness; as in the case of Alcmæon of Croton, the founder of critical science, or Leucippus, the master of Democritus. Nor do we think that the importance in the history of thought of the medical school of Cos has ever before been so fully recognised and proved. We would further call attention to the able study of the Sophists. Many things become clear when we see that the word meant a different thing when Plato first began to write and when he wrote his latest works.

Prof. Gompertz has covered a very wide field, but he does not take his opinions at second-hand. His illustrative notes show that he is abreast of the latest discoveries in nearly all the topics which he handles, linguistics and archæology perhaps excepted; and his opinions, the result of the study of a lifetime and of independent judgment, differ often enough from those which pass current. He is hearty in his praise of men like Prodicus and Protagoras, whose pictures have been caricatured by Plato himself (425, 460); and he is able to offer new and convincing explanations of certain things generally misunderstood, as the dictum, *μέτρον πάντων ἄνθρωπος*, or the triumph of the weaker cause. Aristophanes, as we know, played on the double meaning of *ἥττων λόγος*, and meant to imply that the Sophists defended the worse cause; but this is as untrue as the same poet's picture of Socrates. Prof. Gompertz shows that the aim of the rhetorical training was to help arguments weaker in themselves (not necessarily the worse cause) to gain the victory over the stronger. The style of the book comes as a pleasant surprise to those accustomed to the pomposity of the German scholar. It is clear, often graceful, sometimes epigrammatic, and humorous in the best sense; not striving after effect, but avoiding on either side that which is too much. Here Mr. Magnus must, of course, share the credit, and he has done the translation remarkably well. We would only suggest that more attention might be paid to English custom in the use of proper names; we do not speak of Cypric, or the Peisistratides, or Trapezunt. "Samson's, the Sungod's, bewitchment" is actually incorrect (35), and so is "an archive." In a future edition the author would do well to correct what he says of "grammatical gender" (443), which is certainly not due to personification, and of the fetish (18), which is not properly used of spirits or supernatural powers. But these are small blemishes in a book of remarkable power and interest.

[1] "Greek Thinkers: a History of Ancient Philosophy." By Theodore Gompertz. Vol. I. Translated by Laurie Magnus, M.A. xv. + 610 pp. (Murray.) 14s. net.

RECENT SCHOOL BOOKS.

Modern Languages.

Molière, Les Précieuses Ridicules. Edited by Frederic Spencer. xi.+98 pp. (Dent.) 1s. 3d. net.—A worthy successor to Professor Spencer's edition of *Le Bourgeois Gentilhomme*. The notes show the same commendable restraint and scholarly thoroughness. The English renderings in almost every case fully reproduce the spirit of the original, often in the happiest way. The printing is good; we have only noticed *Macarille* on p. 62. The frontispiece is a reproduction of a map of "Loveland," the *Pays du Tendre;* and an extract from *Clélie* referring to it is printed as an appendix.

The Practical Sound and Sight Method of Language-Teaching. French. Part II. By H. Thiselton Mark and Fr. Prellberg. 88 pp. (Sonnenschein.) 1s.—This little book is evidently the work of experienced teachers, who are fully impressed with the importance of the Reform Method, though they do not carry out all its principles. The book would be better for use in schools if the introductory matter of each section were omitted from the pupils' books. The exercises are useful, except those in which sentences are given and the direction is: *Former des*

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questions pour les réponses suivantes—the idea of a grammarian, not of a teacher. The editors avoid the hyphen in *est il*, *avez vous*, etc., but keep it in *a-t-il*, etc.; and in a few cases they leave the past participle invariable, where according to the final *arrêté* it should agree, *e.g.*, *elle la lui a donné*. The text is well printed; we have noticed some mistakes, *e.g.*, *Zoolgique* (p. 82), *Vendre ti*, *Samedi* (p. 137), *brulée* (p. 96), *clés* (p. 107) but *clefs* (p. 126).

Commercial French. Part I. By W. Mansfield Poole and Michel Becker. xii.+223 pp. (Murray.) 2*s.* 6*d.*—We warmly recommend this book. It is a very careful piece of work, and the only book giving a knowledge of Commercial French which is based on the Reform Method. The book is entirely in French, except for a short *résumé* of the grammar in English, and a vocabulary. The book is excellently printed and neatly bound.

French Pronunciation Exemplified by English Phonetics. By Dr. W. Krisch. 80 pp. (Murby.) 1*s.*—The title will be sufficient to repel most teachers; for what are "English Phonetics"? The book is quite unscientific, being indeed merely another hopeless attempt to represent foreign sounds by English letters. How are you to pronounce *nair du lah gayrr* or *jangteesome?*

Comrades All. No. I. (*Review of Reviews* Office). 1*s.*—Teachers, who can obtain a copy for the nominal price of 2½*d.*, will be much interested in this publication, the new Annual of the *Scholars' International Correspondence*. It proves that progress is being made, and that experience shows how much good can be done by such correspondence, if it is properly supervised by the teacher.

Pierre Corneille, Nicomède. Edited by J. A. Harrison. xxiii. + 153 pp. (Macmillan.) 3*s.* 6*d.* net.—This play has hitherto been little read in our schools and colleges, but may be recommended to the teacher of an advanced class, now that this careful edition is available. It is certainly not one of Corneille's best plays, but it is thoroughly characteristic, and occasional passages recall the finest lines of "the bloom period," to use the American editor's quaint expression. It is to be regretted that he did not point out more clearly what position the play occupies in the literary career of Corneille, and that, having spent so much time over the preparation of this edition, he did not put forth his own estimate of the play in greater detail.

Schiller, Maria Stuart. Edited by M. Müller and C. Wenckebach. xxx. + 262 pp. (Edward Arnold.)—An excellent edition, with all the "editorial" matter in German. There is a careful introduction, dealing with the literary and historical aspects of the play. The text is clearly printed, and the notes are helpful. The questions at the end of the book bear partly on the subject matter and partly on the development of the characters, &c. We believe that this is one of the first editions of a classical play quite in accordance with the principles of the Reform Method, and as such we give it a hearty welcome, and trust that it will soon be followed by other plays and works in prose treated in the same way.

Grammar.

A Short Manual of Comparative Philology. By P. Giles, M.A. Second edition, revised. xl.+619 pp. (Macmillan.) 14*s.*—Mr. Giles's Manual has won a place as the standard manual in this country, and its general merits need no praise from us. We are concerned here only to see how far the second edition differs from the first, and whether it has been brought up to date. To keep a book on comparative philology up to date is difficult, as the study is being pursued diligently by a host of scholars, especially in Germany, but also in this country and in America. It so happens, however, that since Brugmann systematised his researches, there has been more ferment than progress. The natural result of that great scholar's work has been to concentrate attention on the morphology of language; but it is most necessary that research should not be confined to this or any other department. Until quite lately, however, it has been so confined. Even the study of etymology has been somewhat neglected since Curtius, while the study of the meanings of words has only just begun to assert itself. As to the origins of language, they have been left severely alone by professed philologists; and the most important, if not the only, contribution to this department made of late years, Mr. Payne's brilliant essay in his "History of the New World," appears to have gone without notice. With these subjects the Manual does not deal; but we are glad to see Mr. Giles promises us a Greek and a Latin etymology. We hope some one will also give us a neat Comparative Syntax, now that Delbrück and Henry have led the way. There is not much new matter in the second edition of the Manual, but the revision has been careful and thorough. The introductory pages contain additions in nearly every paragraph; as in the account of Armenian, Gaelic, and the Italic dialects. The oldest Roman inscription is added in the Appendix. The account of the spirants, velars and gutturals (113-4) is made more adequate. We need not continue with our list of comparisons, as the revision deals only with details. Improvements have been made in the type, which now expresses significant letters by a thick black fount; but the infelicitous *x* for unknown sounds still remains: as *equo-x-s*. It is a mistake to adopt for unknown sounds a symbol which is used for a known sound. It is a pity, by the way, that a larger type has been used for the text. Nothing is gained by it, and the book is awkward to hold.

History.

Philips' Picturesque History of England. 766 pp. (Geo. Philip & Son.) 4*s.*—The story told in this volume begins with "cave men" and ends with the death of Queen Victoria. It is abundantly supplied with illustrations, and there are several quotations from Shakespeare, Aytoun, and others. A detailed story, therefore, is impossible, yet eight pages are given to the battle of Crecy and five to that of Agincourt. It is evident that the book is not intended for serious study, yet it seems too large and too ambitious for a mere reader. From the style of writing and the choice of illustrations, we get a vague impression that it is an expansion from an older book brought up to the standard of thirty years ago. Some chapters are good, but others are hopelessly out of date. King John still signs Magna Carta both in text and picture. The mediæval Emperor is still "of Germany." There is still but one Self-Denying Ordinance. Hallam's "five checks" are still set forth. Indeed, the three chief authorities quoted are Hallam, Macaulay and Thackeray.

Edited Books.

The Study of Poetry. By H. C. Beeching, M.A. 57 pp. (Pitt Press.) 2*s.*—The author of this volume has put together two lectures to form it about which he says absolutely nothing as to their time and place of delivery. The omission is to be regretted. "Much may be seen in that." The lectures themselves suggest a thoroughly pedagogic origin, and from an educational point of view they might conceivably have been very useful. As criticism, in the better, higher, unpedantic sense of the word, they are not. To read them is only to sigh for a page of Matthew Arnold or even of Coleridge. All is true and nothing is new, and the whole is unilluminative, so far as these painstaking pages go. They leave a student of literature very much where they find him, sorrowing that their author

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is evidently not a poet. They represent commentatorship *in excelsis*, and true criticism—anywhere else.

Two Lectures on the Gospels. By F. C. Burkitt, M.A. 94 pp. (Macmillan.) 2*s.* 6*d.*—These two distinctly valuable lectures were, the author tells us, delivered at Cambridge to the gathering of Extension students in the summer of 1900. As such they present, in a readable and yet not too popular form, the present state of honest scholarship on some vexed questions of textual criticism. These lectures deserve to be very widely read. They are clear, full and convincing, and will appeal to the intelligence of to-day. Unprejudiced study of the Gospels Mr. Burkitt claims as the special distinction of the nineteenth century, and he gives his readers a broad conspectus of its results, by means of arguments which will be accepted by the majority of unbiassed readers as absolutely sound. It is quite refreshing to find Mr. Burkitt declaring the plain truth about Matthew Arnold, in these days when that candid and urbane critic is loftily discredited by some who have not a tenth part of his literary acumen to guide them. "He is often supposed to have rushed in as a kind of *dilettante* theological amateur into regions where none but professors and clergymen should adventure themselves. The fact is that most people, especially most literary people, do not know how well he was equipped for the work. He had the habit and experience of literary criticism and an excellent knowledge not only of the works of modern theologians, but—what is of much more importance—of the ancient sources also. Few professed theologians know how to quote as well as Matthew Arnold from Eusebius or the 'Philosophumena.'" This is only one of the many good things to be found in this volume, quite apart from its main arguments and its manly tone. It is not so much a book to read for reproof or correction as for edification in many senses.

Science and Technology.

Advanced Exercises in Practical Physics. By Prof. Arthur Schuster, F.R.S., and Dr. C. H. Lees. x.+368 pp. (Cambridge University Press.) 8*s.*—In general character, this book resembles Kohlrausch's well-known "Introduction to Physical Measurements." It contains detailed instructions for experiments in mechanics and general physics, heat, sound, light, magnetism and electricity, and should be of service to students in institutions where serious work in practical physics is carried on. Many excellent laboratory manuals dealing with elementary physical principles have been published during the past five or six years, and the present volume may be regarded as supplementary to them. It is often supposed that very elaborate apparatus is required for advanced work in physics, but an examination of this volume will show that very accurate results can be obtained with simple instruments. It is really a liberal education in scientific method to discuss all the sources of error of an experiment, and to eliminate as many as possible by varying the conditions or modifying the apparatus. The student who takes the volume under notice as his guide, counsellor and friend, should be able to present himself for an examination of the standard of an ordinary B.Sc. degree without any fear of failure. In a work intended more particularly for students who have already been through an elementary course, it scarcely seems necessary to illustrate such simple apparatus as a specific-gravity flask and a hydrometer, especially as the illustrations are only rough sketches. The method described for the determination of capillary elevation is not very good. A better plan is to fix a needle upon the lower end of the scale, so that the point projects a little below the scale. The amount by which the point is below can be measured and added to the reading of the scale at every observation. The capillary tube is made to adhere to the scale alongside the needle, the point of which touches the liquid. The distance from the point of the needle to the top of the liquid in the tube then gives the capillary elevation.

Treatise on Qualitative Chemical Analysis. By J. F. Sellars. ix.+160 pp. (Edward Arnold.)—This is yet another book from America. It consists of two parts. The first section deals with analytical operations, the second with reactions and separations. There are few, if any, distinguishing characteristics. For the greater part it is similar to many other volumes which have come before us. With the exception of the facts that a more prominent position than usual is given to spectroscopic methods of chemical analysis, and one or two new separations are included, there seems little reason for introducing the book into this country.

Miscellaneous.

Outlines of Educational Doctrine. By John F. Herbart. Translated by Alexis F. Lange, Ph.D. Annotated by Charles De Garmo, Ph.D. xi. + 331 pp. (The Macmillan Company.) 5*s.* net.—Two years ago we reviewed the translation, made by Mr. and Mrs. Felkin, of these lectures which Herbart delivered some six years before his death. We directed attention on that occasion to their fragmentary character and pointed out that it was only by careful study that a reader could expect to get at the meaning of the master. The present translation differs in several respects from that published by Messrs. Sonnenschein. Prof. De Garmo supplies a running commentary which goes a long way towards showing the respects in which Herbart's system of education requires modernising to bring it into closer relation with the present conditions of society. It is necessary to draw the attention of British students of pedagogics to the fact that the Editor's notes are from the point of view of an American educator. One continually comes across such expressions as "the foregoing remarks may seem strange to the American teacher," "in American schools," and so on. This in no way detracts from the interest of the volume, however, for by adopting the method of averages, the student, by taking the mean between the German and American opinion about difficult problems of scholastic policy, is likely to get a more correct view than is expressed by either authority. A study of the masterpieces of the great educational pioneers serves admirably to accentuate the verdict of the preacher that "there is nothing new under the sun." The modern advocacy of more practical methods of teaching mathematical subjects, for instance, was preceded by an equal earnestness in the same direction on the part of Herbart more than fifty years since. Herbart would allow a boy to use logarithms long before he had an idea of fractional and negative exponents. He would introduce mathematical concepts by the agency of exercises in measuring, counting, and weighing, and so on. Indeed, it may be said that the germ of the South Kensington syllabus in Practical Mathematics is to be found in these lectures delivered in the first half of the last century. Similarly with Geography, and other subjects of the class-room, Herbart has outlined many of the ideas we are apt to regard as modern growths. The book is beautifully printed and attractively bound, and it should find a place on the shelves of all teachers who have no edition of these lectures already.

The Child: his Nature and Nurture. By W. B. Drummond. 146 pp. (Dent.) 1*s.*—The perusal of this little book will lead teachers and parents to confess with conviction, "we have done those things which we ought not to have done, and have left undone those things which we ought to have done, and there is no health in us." In how many schools is the mental fatigue of children taken into consideration, or the relationship between it and bodily condition regarded seriously? Where are the ideal

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schools in which 800 cubic feet of air is allowed per pupil in the class rooms, while the desks and seats are all constructed and arranged on approved principles, and everything is subordinated to the development of all the powers of each individual, beginning with the senses and proceeding through them to the mind? They are yet to seek and are likely to be while a boy remains what he is—unlike every other boy or any other living thing in the universe. It is practically impossible to consider individual tastes and characteristics in a form, however much a teacher may desire to do so. And, after all, it may be just as well that a boy should have to do many things for which he has little inclination; he will be grateful for the discipline when he gets older. This, however, is not said in depreciation of Mr. Drummond's book, which is a sensible statement of factors involved in the physical and mental development of a child. Though more particularly suitable for maternal parents, many matters of interest to teachers are described.

Bookkeeping for Business Men. By J. Thornton and S. W. Thornton. vi.+185 pp. (Macmillan.) 3*s.* 6*d.*—Lawyers who have much to do with Bankruptcy often state that most cases of business-failure are due not to deliberate dishonesty but to careless bookkeeping, or to the absence of attention to that essential of commercial success. This book professes to apply the principles of bookkeeping to practice and to show the business man how to keep his own books. It certainly comes up to its profession. It would be difficult to imagine that the clear, simple, concise explanation at the beginning of the book of Double Entry could be excelled. Double Entry is the *bête noire* of bookkeeping to those who have not studied the art; but the most unenlightened novice could not fail to understand the theory after a careful perusal of the first few pages of this book. The authors then proceed to take the reader into an imaginary business partnership in which every book entry is clearly explained to him. Numerous transactions are entered with a view of meeting every possible difficulty. The book cannot be recommended too highly to business men who desire to teach themselves the important and, indeed, essential art of bookkeeping.

A. B. C. Automatic Balancing Charts. By J. Thornton. (Macmillan.) 1*s.*—These will prove an excellent help to the novice and a great convenience even to the master in bookkeeping. Chart "A" is the weekly summary; Chart "B" contains "the Trading Account" and the "Profit and Loss Account," and Chart "C" the "Balance Sheet" and "Capital Account."

Bacon's Interesting Drawing Charts.—This series of twenty-four large sheets, consisting of examples chosen from the forms of animals and birds, will provide really interesting work for the pupils in all classes. The drawings are large, and executed with a broad soft line which can easily be seen by a moderate-size class. Sixteen sheets are devoted to four-footed animals and eight sheets to birds. Enlarged drawings of details, such as heads, birds' beaks, claws, feet, &c., would have been acceptable to many teachers in lieu of two or three of the examples. The outlines are thorough and correct, especially in such details as the placing of the eyes and the delineation of the extremities. The common fault of overloading the sketches with a great number of lines has been avoided, and the drawings are as simple as possible without losing character. The following sheets are especially good: sheets 3 (fox), 4 (dog), 6 (rabbit), 10 (bear), 12 (lion), 13 (tiger), 21 (peacock), 22 (pheasant), and 23 (pigeon). The stripes of the tiger and the indication of the separate feathers in the peacock have been left out for the sake of simplicity and breadth, yet it will be easy for the teacher to draw attention to these particulars by sketches. Teachers who wish to break the monotony of the ordinary freehand course would do well to purchase these copies. The price (5s. 6d.) is exceedingly moderate.

Plastic Methods for Plastic Minds. (Chapman & Hall.) 1*s.* net.—Is the title of an interesting book by Mrs. Wm. Harbutt, on the use of plasticene for modelling. The exercises are chosen with a view to bringing out dexterity of touch in both hands, and will no doubt give great pleasure to infants and young children. The book has a number of illustrations which clearly show the scope of work in material like plasticene.

LONDON MATRICULATION, JUNE, 1901.

Revision Test Papers.

Latin Grammar and Composition.

(1) Give the gender and genitive singular of—crus, virus, virtus, humus, fenus, and the genitive plural and gender of—nix, arx, ars, mens, artus.

(2) Give the imperative second person singular and the pluperfect subjunctive first person singular, active and passive, of—quatio, caedo, pello, cieo, diligo, tollo, pario, sperno, perlego, haurio.

(3) What constructions are found with—dignor, piget, interest, patiens, noceo, vescor, tenus, spero, subter, causa.

(4) Explain and give examples of—historic infinitive, ablative of attendant circumstances, epistolary imperfect, ethic dative, gerundival attraction.

(5) Illustrate by examples the uses of—quis, quisqus, aliquis, quisque, uterque; illustrate also the various ways of expressing commands and prohibitions.

(6) In what points does the conjugation of *prosum* differ from that of *possum*, and that of *facere* from that of *regere*.

(7) Turn into Latin oratio obliqua after a verb in the past tense:—Do not cause this spot, on which we have taken our stand, to take its name from the destruction of the Roman Army.

(8) Translate into Latin:—

(*a*) He was considered their truest friend by all the bravest men in the army.

(*b*) About three days after the surrender of the town the Romans arrived to help the garrison.

(*c*) We must love our children and forgive them.

(*d*) We have been at Rome for the last three days, and we intend to go on to Athens.

(*e*) He was as kind as he was brave, and more just even than kind.

(*f*) Some go to one place and some to another, but where, I pray, are you going?

(*g*) Added to this was the fact that they so coveted their land that they could not refrain from declaring war.

English Language.

I.—LANGUAGE.

(*Not more than seven of these ten questions are to be attempted.*)

(1) Give a short account of each of the Old English dialects. Had the Teutonic languages any loan-words before the English conquest of Britain?

(2) What were the effects of the Danish invasion on the English language?

(3) "What I have most at heart is that some method should be thought on for ascertaining and fixing our language for ever, after such alterations are made in it as shall be thought requisite." Criticise this statement.

(4) What are the vowel sounds used in English? How is each represented phonetically? Give examples.

(5) What cases had nouns formerly in English? What traces still remain of them? Which of them still formally exist? Of how many of them can the force still be expressed by the simple form of the word without a preposition?

(6) Write notes on the following words:—its, near, crayfish, eaves, newt, vixen, each, treacle, thyself.

(7) The infinitive is sometimes called the substantive mood. Explain this, and give some examples of the different parts

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which the infinitive may play in English sentences. What is the gerundial infinitive, and how was it distinguished in Old English?

(8) Give all the grammatical forms of the verbs—can, shall, will, ought, must; showing (*a*) how far, if at all, each has deviated from its original meaning; (*b*) how the place of the wanting forms is supplied.

(9) In what different ways are adverbs formed in English?

(10) Analyse the following passage:—"Lest we should be misunderstood, it may be as well to say that just as a good land-agent will see that his principal's farms are not too highly rented, that all the repairs are properly done, and that no tenant has any cause to complain of his landlord, so the County Council, if it does its duty, will take care that the workmen in its employ are well paid, that there is nothing niggardly or oppressive about the management of its affairs."

II.—LITERATURE AND COMPOSITION.

(*Not more than two of the first four questions are to be attempted. The essay is obligatory.*)

(1) What are the chief rules of sonnet structure?

(2) State briefly the theme and name of the author of each of the following poems:—"After Blenheim," "The Revenge," "The Loss of the *Birkenhead*," "Alexander's Feast," "The Mermaid Tavern."

(3) Define:—metaphor, simile, rime, lyric, amphibious section, alexandrine. Give examples.

(4) What do you know of any *two* of the following writers:—Wordsworth, Marlowe, Pope, Shelley, Hooker?

(5) Write a short essay on "Style in Literature."

English History and the Geography relating thereto.

(*Not more than eight questions to be attempted, of which one must be either* 6 *or* 12.)

(1) Give some account of the English conquest of Britain, and trace in outline the relations of the chief English kingdoms with one another down to the accession of King Egbert.

(2) Mention some of the principal occasions on which the English came into contact with the Scots down to the Norman Conquest.

(3) Write a life of *either* (*a*) Anselm, *or* (*b*) Dunstan, *or* (*c*) Lanfranc.

(4) State briefly, in chronological order, the circumstances and terms of the treaties made at Bretigny, Falaise, Northampton, Troyes, and Wallingford.

(5) Write a connected account of the reign of *either* (*a*) Edward II., *or* (*b*) Richard II., bringing out clearly the main causes of the king's deposition.

(6) Draw a sketch map of England, inserting twelve principal rivers and the position of twelve places having notable associations with English history down to the accession of Henry VII. Summarise in tabular form the notable events which you associate with the places marked.

(7) Describe, in some detail, any important insurrection in England during the sixteenth century.

(8) Give the gist of the Elizabethan *Act of Supremacy* and of the Caroline *Act of Uniformity*.

(9) Trace the relations existing between England and Spain from the defeat of the Armada to the death of William III.

(10) Alfred the Great and Oliver Cromwell have each been characterised as "the greatest Englishman who ever lived." Which do you think has the better claim to that praise, and why? Name any other man who in your opinion has better claims, giving your reasons.

(11) Enumerate the English kings who have borne the name of "Edward." Give the title and date of each with as much precision as you can.

(12) Describe carefully the geographical position of the following ten places, and show how they are connected with English history during the sixteenth and seventeenth centuries:—

Amboyna, Breda, Cadiz, Drogheda, Langside, Limerick, Massachusetts, Philiphaugh, Quebec, Ryswick.

Arithmetic and Algebra.

(1) (i.) Show that if one number is a measure of the divisor and dividend in a certain sum, it is also a measure of the remainder. Thence prove the rule for finding the greatest common measure of two numbers, taking as an example the two numbers 774 and 1118.

(ii.) The year consists of 365·24224 days. What is the percentage error arising from taking it as 365¼ days? and in how many years will the error amount to one day?

(2) Find, to the nearest penny, the cost of completely covering with new postage stamps, value 25 centimes each, the outside of a rectangular box 26 centimetres long, 16 centimetres wide, and 20 centimetres high, if each stamp be 15 millimetres by 10 millimetres and 25 francs be equal in value to £1 sterling.

(3) The income tax was reduced from 7½d. to 6d. in the pound, but a man's total income was at the same time reduced by 3⅛ per cent. Find by what percentage his net income was altered.

(4) At what price must a sum of money be invested in the 8 per cents. to bring in a return of 5 per cent. on the investment?

A man transfers £7,700 stock from the 4½ per cents. at 112 to the 8 per cents. at 154; what is the change in his income?

(5) (i.) What algebraical expressions will divide each of the expressions $x^4+x^3y-3x^2y^2-xy^3+2y^4$ and $x^4-x^3y-3x^2y^2+xy^3+2y^4$ without remainder?

(ii.) Simplify:—

$$\frac{2xy}{x-y-\dfrac{x^2}{x-y-\dfrac{y^2}{x-y}}}.$$

(6) Solve the equations:—

(i.) $\dfrac{2x+\frac{1}{5}}{3}+\dfrac{3x+\frac{1}{4}}{2}=\dfrac{4x+\frac{1}{3}}{4}-\dfrac{11}{60}$;

(ii.) $14x-3y=\dfrac{x+y-5}{5}$

$\dfrac{3x-8y+25}{8}=\dfrac{3(2x-y)}{7}$;

(iii.) $\dfrac{1}{x-5}+\dfrac{1}{2x-7}=\dfrac{4}{9}$.

(7) The collection at a morning service was £8 more than at an evening service; if the first collection had been £2 10s. 6d. more and the second collection £1 1s. 2d. less, the difference between the two collections would have been one-fourth of their sum; find the amount of each collection.

(8) A ratio of greater inequality is diminished and a ratio of less inequality is increased by adding the same quantity to both its terms.

Two numbers are in the ratio of 4 to 7. If 11 be added to each they are in the ratio of 9 to 13. Find the numbers.

(9) Find the sum of an arithmetic series of n terms whose first term is a and whose last term is l.

The sum of two consecutive terms of a geometrical series is four times the sum of the two immediately preceding terms and the sum of the first eight terms is 1020; find the series.

Answers.

(1) (i.) 86; (ii.) ·00212; 128·8659 yrs. (2) £16 15s.
(3) 2½%. (4) 160; £101 10s.
(5) (i). $x-y$, $x+y$, x^2-y^2; (ii.) $\dfrac{x(x-2y)}{y-x}$.
(6) (i.) $-\frac{1}{4}$; (ii.) 1, $4\frac{5}{8}$; (iii.) 8 or $3\frac{7}{8}$.
(7) £26 8s. 8d., £18 18s. 8d. (8) 16 and 28.
(9) 4, 8, 16, . . .

Geometry.

(1) If one straight line stand upon another straight line, the adjacent angles shall be either two right angles or together equal to two right angles.

(2) All the interior angles of any rectilineal figure are together equal to twice as many right angles as the figure has sides less four right angles.

In any rectilineal figure which has five, or more than five, sides, if three consecutive angles be together equal to four right angles, two, at least, of the sides of the figure are parallel.

(3) The median bisects the triangle.

ABC, DBC, are triangles on the same base and between the

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same parallels; draw a straight line to cut the sides AB, AC, DB, DC, in the points E, F, G, H, such that EF equals FG or GH.

(4) In every triangle the square on the side subtending an acute angle is less than the squares on the sides containing that angle, by twice the rectangle contained by either of these sides, and the straight line intercepted between the perpendicular let fall on it from the opposite angle and the acute angle.

The sum of the squares on the sides of a parallelogram is equal to the sum of the squares on its diagonals.

(5) If from a point within a circle more than two equal straight lines can be drawn to the circumference that point is the centre of the circle.

(6) The tangents drawn to a circle from an external point are equal and subtend equal angles at the centre.

From A, B, the centres of two given circles, AC and BD are drawn to touch the circles; show that the tangents from C to the circle, whose centre is A, are equal to the tangents from D to the circle whose centre is B.

(7) If a pair of opposite angles of a quadrilateral are together equal to two right angles, its vertices lie on a circle.

(8) If two chords of a circle cut one another, the rectangle contained by the segments of the one shall be equal to the rectangle contained by the segments of the other.

Two circles intersect in A and B; a third circle is drawn cutting them in C, D, and E, F, respectively; show that CD and EF intersect on AB.

(9) Construct a triangle having each of the angles at the base double the vertical angle.

What other triangles in the figure of your construction fulfil the same conditions?

General Elementary Science.

CHEMICAL QUESTIONS.

(1) A bunch of violets is placed into a jar of chlorine gas. Describe fully what changes, if any, take place. Explain, as well as you can, any changes which you mention.

(2) How would you proceed to obtain a sample of pure oxygen from the atmosphere? In what important natural processes does the oxygen of the air take a leading part? State carefully in what way the oxygen is useful in each of the cases you enumerate.

(3) If you were provided with some pieces of copper and some sulphuric acid, how would you proceed to prepare some crystals of copper sulphate? Mention the names and properties of any other compounds which would also be formed during the operations.

PHYSICAL QUESTIONS.

(1) You are given a cubical glass paper-weight. Describe, in detail, how you would find its volume in cubic centimetres by two distinct methods.

(2) If from a circular sheet of lead of uniform thickness one foot in diameter a round hole one inch in radius be punched out, calculate the position of the centre of gravity of the remaining portion, when the centres of the disc and the hole are four inches apart. How would you confirm your result experimentally?

(3) A bullet, when fired with a certain velocity into a piece of wood, penetrates it to a depth of two inches. How far will a bullet of twice the mass penetrate if it is discharged with the same velocity, and if the resistance to penetration is the same as in the case of the first bullet?

(4) A pound of boiling water is poured on to a block of ice. How much ice will be melted, supposing that all the heat given out by the water is taken up by the ice?

To what extent would the temperature of ten pounds of water at 15°C. be raised by the same amount of boiling water?

(5) Draw a diagram to explain how you would arrange two convex lenses, the focal length of one of which is considerably greater than that of the other, so as to illustrate the principle of a simple telescope.

What do you mean by the principal focus of a lens?

(6) What is the result of passing an electric current between two platinum plates through a solution of copper sulphate? What substances appear at the platinum plates, and what effect would changing the direction of the current have?

(7) Describe how *either* a barometer *or* an electric bell acts.

French.

(1) Translate into English:—

Charles était un homme trop à la mode, il avait été trop constamment heureux par ses parents, trop adulé par le monde, pour avoir de grands sentiments. Le grain d'or que sa mère lui avait jeté au cœur était étendu dans la filière parisienne; il l'avait employé en superficie et devait l'user par le frottement. Mais Charles n'avait alors que vingt et un ans. A cet âge la fraîcheur de la vie semble inséparable de la candeur de l'âme. La voix, le regard, la figure paraissent en harmonie avec les sentiments. Aussi le juge le plus dur, l'avoué le plus incrédule, l'usurier le moins facile hésitent-ils toujours à croire à la vieillesse du cœur, à la corruption des calculs, quand les yeux nagent encore dans un fluide pur, et qu'il n'y à point de rides sur le front.

(2) Translate into French:—

It was impossible to live a month at Cranford and not know the daily habits of each resident; and long before my visit was ended I knew much concerning the whole Brown trio. There was nothing new to be discovered respecting their poverty: for they had spoken simply and openly about that from the very first. They made no mystery of the necessity for their being economical. All that remained to be discovered was the captain's infinite kindness of heart, and the various modes in which, unconsciously to himself, he manifested it.

(3) Give the masculine terms corresponding to—*madame votre mère; Sa Majesté la Reine; cette femme; la femme de Monsieur X.*; and the plurals corresponding to—*celui, je me suis flatté, œil, va-t'en.*

(4) Write French and English sentences illustrating the difference between the following French and English words. Translate the sentences in each case. (1) *faillir* and *fail*; (2) *rapport* and *report*; (3) *vilain* and *villain*; (4) *vacance* and *vacancy*; (5) *attendre* and *attend*.

(5) Translate into French:—

(*a*) That is more difficult than I had thought.
(*b*) He is not likely to answer at once.
(*c*) I have not seen him for a long time.
(*d*) I have nearly finished.

(6) Write in tabular form the second person singular of the present indicative and imperfect subjunctive and the third person plural of the future and imperfect indicative of—*va, crû, sus, lui, vécu, fis, mort, atteint.*

(7) Translate the following sentences and explain why the indicative is used in the first two and the subjunctive in the last two: (1) Croyez-vous qu'il pleut? (2) Il prétend que tout se fait par lui. (3) Croyez-vous qu'il pleuve? (4) Il prétend que tout se fasse par lui.

SECOND CLASS (JUNIOR) COLLEGE OF PRECEPTORS, JUNE, 1901.

Revision Test Papers.

English Grammar and Analysis.

(1) Analyse:—

We thought, as we hollow'd his narrow bed,
And smoothed down his lonely pillow,
That the foe and the stranger would tread o'er his head,
And we far away on the billow.

(2) Parse—

A heart, with English instinct fraught,
He yet can call his own.

(3) Correct the following sentences, giving your reasons:

Whom do you think that he is?
Each of you must read in their turn?
Between you and I, Tom as well as John are to blame.

(4) Explain carefully the functions of Relative Pronouns.

(5) Give instances to illustrate the rules for forming the plurals of Compound Nouns.

(6) Define the following and write sentences in illustration:—Indirect object, weak verb, factitive verb, pronominal adverb, prepositional phrase.

(7) Explain the different uses of the Infinitive.

(8) Give the meanings of the following Latin prefixes, and illustrate each by two English words:—ab—, bis—, cum—, non—, pro—, se—.

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English History.

1066-1603.

(1) Collect instances during your period of (*a*) successful, (*b*) unsuccessful, invasions of England.

(2) Explain *not more than five* of the following terms, with illustrations from English history during your period :—

Appeal, cardinal, impeachment, monopolies, ordinance, papal legate, praemunire, scutage, treason, vassal.

(3) *Either* (*a*) Enumerate carefully the dominions ruled by each of the first six Edwards since the Norman Conquest.

Or (*b*) Trace the relations between England and Ireland down to the death of Elizabeth, stating when and why the English king assumed the title "King of Ireland."

(4) *Either* (*a*) Give some account of the wars of Henry V.

Or (*b*) Describe the campaigns of Crecy and Agincourt.

(5) *Either* (*a*) Account for the failure of the House of Lancaster,

Or (*b*) Describe the political career of Cardinal Wolsey.

(6) *Either* (*a*) Show how the Tudor kings maintained the independence of England against foreign potentates,

Or (*b*) Show how and why the kingdoms of Scotland and England became less unfriendly to one another during the Tudor period.

Geography.

(Seven questions only may be attempted. Three must be taken from Section A, and the remaining four from one of the other sections.)

Section A.—General.

(1) Name, in order, the countries along the north and west coasts of Africa, with the capital of each, and the river, &c., on which it stands.

(2) Explain the following expressions and give instances :—sphere of influence, Greenwich time, native reservations, artificial boundary, high latitudes, contour-map.

(3) Where are the following ranges of mountains? Give the general direction of each :—Alleghany, Rocky, Blue Alps, Altai, Ghats, Dovrefeld, Sierra Morena.

(4) Where does each of the following rivers rise, and into what does it fall?—Congo, Nile, Tagus, Indus, Lena, Volga, Great Fish, Danube.

Section B.—England and Wales, British South Africa and France.

(1) Name, in order, from north to south, the rivers which rise on the eastern slopes of the Pennine Chain. What towns are situated at their mouths? Mention the special industry of each town.

(2) Describe the course of the river Severn, noting its source, tributaries, towns on its bank and estuary. Illustrate by a sketch-map.

(3) What does the term "British South Africa" comprise? Give a short account of the industrial state of the country.

(4) On an outline map of South Africa insert :—Cape Town, Port Elizabeth, Kimberley, Durban, Pretoria, Johannesburg, Lorenzo Marques, Delagoa Bay, Zanzibar. Trace the course of the Orange River.

(5) On an outline map of France insert the chief mountain ranges and rivers. Indicate the most thickly-populated districts; draw the 44th parallel of latitude and the 4th meridian of east longitude.

(6) Describe the climate and rainfall of France, and compare it with England in these two respects.

Section C.—Great Britain and Ireland, and Asia.

(1) Draw a sketch-map of Ireland, inserting the principal mountains and rivers and ten chief towns.

(2) For what manufactures are Redditch, Burton, Coventry, Kidderminster and Honiton respectively noted?

What has caused the increased importance in recent years of Middlesborough, Crewe, Grimsby, Ventnor?

(3) Give an account of the ranges of mountains situated in the Highlands of Scotland.

(4) Give some account of the plateau regions of Western and Central Asia.

(5) Give a geographical description of Japan under the following heads :—(*a*) Position. (*b*) Dimensions. (*c*) Principal towns. (*d*) Productions. (*e*) Manufactures. (*f*) Government.

(6) Draw a map of India and insert :—The boundaries of *two* Native States, the Himalayas, the Ganges, Laccadive Islands, Calcutta, Goa, Amritsar, Peshawur.

What time is it at Calcutta when it is noon at Greenwich?

Section D.—Physiography.

(1) On what days of the year are the lengths of the day and night equal? How do you account for this? Give a diagram explaining the relative positions of the earth and sun on these days.

(2) Explain briefly how coal and chalk have been formed.

By what characters would you distinguish a country where chalk occurs as the stratum immediately beneath the soil.

(3) Which is the heavier, a pint of river water or a pint of sea water? What reasons can you give for the difference? Does a pint of water from any ocean weigh the same?

(4) A man goes up in a balloon. He takes with him a thermometer and a barometer; what differences, if any, will he observe in the readings of the instruments as he ascends?

Arithmetic.

(1) A bill of £37 17s. was paid with an equal number of sovereigns, half-sovereigns, shillings, sixpences and half-pence. How many were there of each?

(2) The G.C.M. of two numbers is 91 and their L.C.M. is 350350. One of the numbers is 6370; find the other.

(3) Simplify $\frac{3}{5}$ of $2\frac{1}{4}+\frac{1}{4}$ of $3\frac{1}{5}\frac{1}{1}\div\frac{2}{7}$ of $4\frac{1}{2}-\frac{4}{5}$ of $1\frac{1}{1}\frac{1}{1}$.

(4) Divide 1·01347 by ·001286 correctly to two places of decimals; and find the value of ·42578125 of a ton.

(5) Posts are set up round a circular track at a distance of 5 metres 75 centimetres apart; if there are 120 posts, what is the length of the track? and how long will a man take to run round it at the rate of 1 kilometre in 3 minutes?

(6) What is the rent of 16 ac. 1 ro. 25 po. if 5 ac. 1 ro. 3 po. are let for £33 19s. 1d.?

(7) Find, by Practice, the value of 4 miles 17 poles $2\frac{3}{4}$ yards of cable at £19 5s. a furlong.

(8) Obtain the Simple Interest on £243 15s. for 1 year 4 months at $4\frac{1}{2}$ per cent. per annum.

(9) Find the length of the side of a square tank $4\frac{1}{2}$ feet deep which is capable of holding 1,155 gallons. (A gallon contains 277·2 cubic inches.)

(10) Two towns are 113 miles apart. A train starts from the first at ten o'clock and travels towards the second at a rate of 36 miles per hour, stopping for a quarter of an hour at a quarter-past ten; another train starts from the second town, also at ten o'clock, and travels towards the first at a rate of 48 miles an hour, pulling up for five minutes at a quarter-past eleven; when and where will the trains meet?

Answers.

(1) 24. (2) 5005. (3) $3\frac{1}{17}$. (4) 787·07; 8 cwt. 2 qrs. 1 lb. 12 oz. (5) 690 metres; 2·07 mins. (6) £105 14s. 7d. (7) £624 8s. 5½d. (8) £13 16s. 3d. (9) 6 ft. 5 in. (10) Half-past eleven; 45 miles from the first town.

Algebra.

(1) If $x=2, y=-3, z=4$, find the value of

$$\sqrt{x^2+xy+2y^2}\{y-z\,\overline{z-x}+x-y^2\}.$$

(2) Multiply $\frac{2}{3}\left(a+\frac{3c}{4}\right)-\frac{1}{2}\left(b-\frac{2a}{3}\right)$ by $a-\frac{2}{3}\left(b-\frac{3c}{4}\right)$.

(3) Find the factors of (i.) $x^2+14x-51$, (ii.) $a^3+\frac{27b^3}{8}$, (iii.) $16x^4+4x^2+1$.

(4) Extract the square root of $9x^2-3x+\frac{49}{4}-\frac{2}{x}+\frac{4}{x^2}$.

(5) Solve the equations :—

(i.) $4(x+5)(x+2)-3(x^2-4)=(x-2)^2+8(3x+5)$;

(ii.) $\frac{3x-y}{2}+3y-x=4+\frac{2x-y+1}{3}$

$\frac{4x+5y}{21}+2y=x-2$.

(6) A greengrocer bought 400 cabbages at the rate of 25 for two shillings; he sold some for half as much again as he gave for them and the remainder at one penny each; his total profit was 5s.; how many did he sell at each price?

(7) Find the H.C.F. of $2a^3-7a^2b+7ab^2-2b^3$ and $2a^3+5a^2b+ab^2-2b^3$.

Simplify $\frac{2x+3}{x^2-3x-4}-\frac{3x}{x^2-16}+\frac{x+2}{x^2+3x-4}$.

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(8) x men can do as much work in a days as y boys can do in b days; how long will x men and y boys take to do a piece of work which would take one man alone c days?

Verify your result when $x=2$, $y=3$, $a=5$, $b=7$, and $c=48$.

(9) Solve $\frac{3x+2}{x-4} - \frac{2(x+13)}{2x-1} = 13$.

Answers.

(1) 44. (2) $a^2 - \frac{7ab}{6} + \frac{b^2}{3} + ac - \frac{7bc}{12} + \frac{c^2}{4}$.

(3) (i.) $(x+17)(x-3)$; (ii.) $\left(a+\frac{3b}{2}\right)\left(a^2-\frac{3ab}{2}+\frac{9b^2}{4}\right)$; (iii.) $(4x^2+2x+1)(4x^2-2x+1)$.

(4) $3x - \frac{1}{2} + \frac{2}{x}$. (5) (i.) -1; (ii.) $x=8$, $y=2$.

(6) 100, 300. (7) $2a-b$; $\frac{2(4x^2-3x-10)}{(x^2-10)(x^2-1)}$.

(8) $\frac{bc}{(a+b)x}$ days; 14 days. (9) 5 or $-\frac{5}{11}$.

Geometry.

A.—BOOK I.

(1) What is an axiom? What axiom is assumed in the method of proof "by superposition"? Enunciate any propositions you know of which may be proved by this method, and prove *one* of them.

(2) In a triangle if one angle be greater than another the side opposite to the greater angle shall be greater than the side opposite to the less.

AD is the bisector of the angle BAC in the triangle ABC; show that AB and AC are respectively greater than BD and DC.

(3) Define an angle and name the different kinds of angles. Describe an angle equal to a given angle.

(4) Straight lines which are parallel to the same straight line are parallel to one another.

Two straight lines are drawn parallel to the base of an isosceles triangle; show that the segments of the sides intercepted between them are equal.

(5) Define a parallelogram. Prove that the complements of the parallelograms about the diagonal of any parallelogram are equal.

Through E, any point on the diagonal BD of a parallelogram ABCD, straight lines FEK, GEH, are drawn parallel to the sides AD, AB, and cutting AB in F and BC in H; show that the figure DFBH is equal in area to the parallelogram AH.

Either B.—BOOK II.

(6) If a straight line is divided into any two parts, the rectangle contained by the whole and one of the parts is equal to the square on that part, together with the rectangle contained by the two parts.

If the point of division be a point of trisection, show that the rectangle contained by the whole line and the smaller part is equal to three times the square on the smaller part.

(7) AB is a straight line divided equally at P and unequally at Q; show that (i) AP is half the sum of AQ and QB; (ii) PQ is half the difference of AQ and QB.

Draw a figure showing that the difference of the squares on AP and PQ is equal to the rectangle contained by AQ and QB.

Or C.—BOOK III., 1—19.

(6) When are two circles said to touch one another?

Explain the difference between "internal" and "external" contact.

If two circles have external contact, the straight line which joins their centres passes through the point of contact.

Two points A and B are 5 inches apart; if circles be described with A and B as centres, what relation must hold between the lengths of their radii that the two circles may have external contact?

(7) Draw a tangent to a circle from a given point without it.

How many such tangents can be drawn?

If P be the given point, and C the centre of the given circle, show that the square on the tangent is equal to the difference of the squares on PC and the radius of the circle. Thence show that if more than one tangent can be drawn, these tangents must be equal.

French.

I. Translate into English:—

Quand Tom, après quelques années, se demande ce qu'il est venu faire à l'école, il se répond à lui-même, après réflexion: "J'ai envie d'être le numéro 1 au cricket et au ballon, et à tous les autres jeux, et de savoir me servir de mes poings assez bien pour garantir ma tête contre les poings de tout autre homme, gentleman ou rustre. J'ai envie d'emporter d'ici assez de latin et de grec pour me soutenir à l'université convenablement. J'ai envie de laisser ici derrière moi la réputation d'un garçon qui n'a jamais brutalisé un petit ni tourné les talons devant un grand."

II. (1) Give the second person singular and the third person plural of the present indicative, future and present subjunctive of—*se laver*, *punir*, *s'apercevoir*, *faire* and *venir*.

(2) Put into French:—(*a*) Come and speak to me; (*b*) You gave them to him; (*c*) He is two years older than I; (*d*) Once upon a time there was a little boy; (*e*) He was deaf and dumb.

(3) Turn *chat* into the feminine, and make the necessary alterations in the following sentence:—Ce chat est très joli; c'est le plus joli de tous les chats. Write in the plural—Mon oncle est arrivé. As-tu perdu ton joujou? j'ai trouvé le mien; and in the singular—Les fils de ma tante ont mis leurs chapeaux.

(4) Write in French words:—May 1st, 1901; I saw him on Saturday; 21, 21st; 94, 94th; 300, 301.

(5) Decline in all genders, cases and numbers, the French third personal pronoun.

III. Translate into French:—

There was once a good man who had two children, a girl and a boy. The girl was as white as milk, and her lips were like cherries. Her hair was like golden silk, and it fell to the ground. Her brother loved her dearly, but her wicked stepmother hated her. "Child," said the stepmother one day, "go to the grocer's shop and buy me a pound of candles." She gave her the money; and the little girl went, bought the candles and started on her return. There was a stile to cross. She put down the candles whilst she got over the stile. Up came a dog and ran off with the candles.

THIRD CLASS
COLLEGE OF PRECEPTORS, JUNE, 1901.

Revision Test Papers.

English Grammar.

[*Study the following passage before answering Questions* 1, 2, 3, 4.]

The accumulated masses of living creatures which the springboks exhibit on the greater migrations is utterly astounding, and any traveller witnessing it as I have, and giving a true description of what he has seen, can hardly expect to be believed, so marvellous is the scene.

(1) What is the use of each of the following words, and to what part of speech does it belong?—*accumulated*, *utterly*, *any*, *of*, *seen*.

(2) Parse, as fully as you can:—"and any traveller can hardly expect to be believed."

(3) Write down the *subject*, and where possible the *object*, of each of the verbs given below:—(*Tabulate your answer thus*:—)

Verb.	Subject.	Direct Object.
exhibit		
is		
have		
expect		

(4) Make a list of all the *pronouns* in the passage, and opposite each write what kind of pronoun it is.

(5) In passing from one form of a word to another, when is the final consonant doubled? Give instances.

(6) What is meant by a *phrase*? What by a *clause*?

(7) Correct, or justify the following sentences, giving your reasons:—

(i.) This is quite different to that.
(ii.) Asia is bigger than all the continents.
(iii.) Smoking is only permitted in special compartments.
(iv.) More than one book was lost.

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(8) Write, with proper capitals, stops, inverted commas, etc. :—

crossing the dart i spun on pushing our way carefully through herds of cows and swine and droves of sheep the drivers shouting hut 'un on the side with your wheel sor mak 'em get out of wai i asked if it was far to tiverton ay zur said one tiverton be sixteen maile fra heyur law zur said another her be naigh nine maile i rakkon.

English History.

1066-1603.

(1) Write down, in three columns, (*a*) the following episodes *ranged in chronological order*, (*b*) their approximate dates, (*c*) the names of any prominent persons connected with them :—

Battle of the Standard ; Bridal of Norwich ; Coming of the Friars ; Dissolution of the Monasteries ; Expulsion of the Jews ; Island Voyage ; Jesuit Invasion ; Lancastrian Revolution ; Peasants' Rising ; Revival of Learning.

(2) *Either* (*a*) Describe the conquest of England by William of Normandy,

Or (*b*) Write a life of Anselm.

(3) Narrate the story of *either* (*a*) John's quarrel with the Pope,

Or (*b*) The struggle between Edward II. and his great barons.

(4) *Either* (*a*) Name half-a-dozen battles fought by land and sea in the course of the Hundred Years' War, stating briefly the time, place, and result of each ;

Or (*b*) Give a full account of the Lollards.

(5) Show what difficulties *either* (*a*) Henry IV. *or* (*b*) Henry VII. had to contend against in maintaining possession of the English crown.

(6) *Either* (*a*) Tell the story of Cranmer's archiepiscopate,

Or (*b*) Describe Elizabeth's dealings with Ireland.

Geography.

(*Question* 2 *is obligatory, and not more than five others are to be answered.*)

(1) Name, in order, the countries of Europe bordering on the Mediterranean Sea, also the capital of each, and the river, &c., on which it stands.

(2) Draw a map of the six northern counties of England ; mark the rivers, mountains and chief towns.

(3) What are the differences among the following mountain ranges : —Pennine, Cambrian, The Downs ?

What proofs have we that glaciers once existed in this country ?

(4) Name the plains of England, and state what rivers flow through each.

(5) Where are these places, and for what are they noted :—Bath, Ventnor, Blackpool, Hull, Crewe, Calais, Brindisi ?

(6) Explain and give instances of :—lagoon, roadstead, steppe, firth, volcano.

(7) What parts of continental Europe produce the largest amounts of flax, wheat, potatoes, butter, wool, coal and salt ? And in each case explain why, as far as you can.

Arithmetic.

(1) What number must be added to eleven millions three hundred and seventeen thousand and twenty-four to make it exactly divisible by fourteen thousand five hundred and sixty-eight ?

(2) £100 18s. 9d. was divided among 25 men and 45 women. If each woman received £1 3s. 6½d., how much did each man receive ?

(3) A square field is 5 fur. 27 yds. each way ; how many inches are there in the length of its four sides ?

(4) Add together $3\frac{5}{8}$, $10\frac{4}{9}$, $11\frac{1}{12}$, $5\frac{17}{108}$.

(5) Subtract $15\frac{5}{17}$ from $16\frac{3}{51}$.

(6) A owns $\frac{15}{38}$ of a vessel. At the end of a year the total profits are £6,656 13s. ; what is A's share ?

(7) Explain, by reference to the corresponding vulgar fractions, why ·125 is equal to ·12500.

Express as decimals $\frac{1}{8}$, $\frac{3}{16}$, $\frac{5}{128}$.

(8) Multiply 2·413 by 24·13 and divide 1·0897 by ·17.

(9) If 3 cwt. 3 qrs. 20 lbs. of coffee cost as much as 2 cwt. 16 lbs. of tea, how much tea should be given in exchange for 88 lbs. of coffee ? (Simple Proportion.)

(10) A certain sum of money was divided among A, B, and C. A and B received £32 12s. 2d. ; A and C £33 10s. 4d. ; B and C £35 13s. 6d. How much did C receive more than A ?

(11) A coal merchant buys 23 tons of Wallsend coal at £1 2s. 9d. per ton, 64 tons 5 cwt. of kitchen coal at 18s. 8d. per ton, and 18 tons, 6 cwt. 2 qrs. of coke at £1 6s. 8d. per ton. What will be the total cost ?

Answers.

(1) 2312. (2) £1 18s. 4½d. (3) 162288. (4) $31\frac{17}{1008}$.
(5) $\frac{11}{51}$. (6) £2,627 12s. 6d. (7) ·125, ·1875, ·0390625.
(8) 58·22569 ; 6·41. (9) 48 lbs. (10) £3 1s. 4d.
(11) £110 11s. 3d.

Algebra.

(1) Define a coefficient, a factor, a product. Illustrate your answer from the term $16abc$.

If $a=2$, $b=3$, $c=-1$, $d=1$, find the numerical value of

$$\frac{a+b}{cd}+\frac{b+c}{ad}-\frac{2b}{ac}+\frac{3(a+c)}{b+d}.$$

(2) Simplify :—

$$14a-\{7a-2b+[3a-2(a-3b)]-5\overline{a-3b}\}.$$

(3) Find the product of $x^2-2xy+y^2$ and x^2-xy-y^2.

(4) Divide the sum of a^3-a^2b, $2ab^2-5b^3$ and b^3-2ab^2 by $a^2+ab+2b^2$.

(5) Solve the equations :—

(i.) $2(x-4)-4(x+7)+3(x+3)=5(x-2)+3$;

(ii.) $\frac{1}{4}(3x+5)-\frac{1}{10}(2x-11)=6+\frac{1}{20}(5x+17)$;

(iii.) $\frac{2x-7}{2(x+3)}-\frac{1}{x+5}=\frac{3x-13}{3(x+3)}$.

(6) Simplify :— (i.) $\frac{1}{3x-4y}-\frac{x+y}{9x^2-16y^2}$;

(ii.) $\frac{3x^2-3}{2x+4}\times\frac{x^2-4}{x+1}\times\frac{x-2}{3(x-1)}$.

(7) A man has three sons ; the sum of their ages is a years ; what will be their combined ages in b years' time ?

(8) A has £5 more than B. If A gives B one-fourth of what he has, B will then have £1 10s. more than A has ; how much has each ?

Answers.

(1) $-\frac{1}{4}$. (2) $11a-7b$. (3) $x^4-3x^3y+2x^2y^2+xy^3-y^4$.
(4) $a-2b$. (5) (i.) -5 ; (ii.) 15 ; (iii.) 7.
(6) (i.) $\frac{2x+3y}{9x^2-16y^2}$; (ii.) $\frac{(x-2)^2}{2}$. (7) $a+3b$.
(8) A £13, B £8.

Euclid.

Book I., Props. 1—26.

(1) Define a plane angle and a right angle. Show that your first definition includes the second.

A, B, C, D are four points, no three of which are in the same straight line. Draw a figure, marking on it all the angles which can be obtained by joining the points two and two.

(2) When are two triangles said to be "equal in all respects" ?

If two triangles have two sides of the one equal to two sides of the other, each to each, and the angles included by these sides equal, then shall the triangles be equal in all respects.

(3) Show that the straight line which bisects the vertical angle of an isosceles triangle divides the triangle into two parts which are equal in all respects.

(4) AB is a straight line standing on the straight line CD ; show that the angles ABC, ABD, are either two right angles or together equal to two right angles.

If AB, BC and BD be equal, and AC, AD, be joined, show that the angle CAD is equal to the sum of the angles ACD, ADC.

(5) Any two sides of a triangle are together greater than the third side.

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Make use of this proposition to show that the shortest distance between two points is the straight line joining them.

(6) ABC is a triangle, and BD is drawn to any point D in the base AC; show that if P be a point on BD, the sum of PA and PC cannot be greater than the sum of BA, BC, nor less than AC.

(7) At a given point in a given straight line describe an angle equal to a given angle.

(8) ABC, DEF, are two triangles standing on equal bases BC, EF, and having the angle ABC equal to the angle DEF; if AB be greater than DE, show that the angle ACB is greater than the angle DFE.

French.

(1) Translate into English:—

(*a*) Le fils du roi donna un bal et en pria (invited to it) toutes les personnes de qualité.

(*b*) Les deux sœurs de Cendrillon en furent aussi priées.

(*c*) L'ainée disait à Cendrillon, "Je mettrai mon habit de velours rouge."

(*d*) Cendrillon voulait aussi aller au bal, mais ses habits étaients trop vilains.

(*e*) Sa marraine la toucha avec sa baguette et ses habits furent changés en des habits de drap d'or et d'argent.

(2) Write in full the present indicative of—*prier* and *venâre*, the imperfect indicative of—*finir* and *recevoir*, and the future of—*être* and *avoir*.

(3) Give the plural of—*cheval*, *père*, *Anglais* and *œil*; and the feminine of—*heureux*, *mignon*, *fils* and *fou*.

(4) Put into French:—(*a*) He is better than I; (*b*) Give me those books; (*c*) I will send them to him; (*d*) Have they found the pen? Which pen was it?

(5) Give the superlative of—*bon*, *mauvais*, *fameux*, and form adverbs from—*soigneux*, *franc* and *bon*.

(6) Translate into French:—

(*a*) If the prince gives a ball he will invite Cinderella.

(*b*) Her godmother will change her ugly dress into a pretty gown.

(*c*) Her sister has only a red velvet dress.

(*d*) She would much prefer Cinderella's.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in* THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.

Aims and Methods of Science Teaching.

I DESIRE to thank Mr. Abbott for his letter in your April issue commenting on my paper in the *London Technical Education Gazette*. It is important that questions such as those about which we are at issue should be brought under notice. I would ask, however, that Mr. Abbott's version of my views may not be accepted as authentic. On one or two points it may be desirable to state them more clearly.

Although I regret that a teacher who is engaged in the good work of endeavouring to help his colleagues to better methods should totally disagree with my remark that "if people learn to weigh things, they will, perhaps, in time learn to weigh opinions," I must confess that I am not in the least surprised. On the contrary, I should have been surprised, having studied his syllabus, to find him in agreement with me. The *quantitative sense* has not yet reached the embryonic stage of development among us. Few are sufficiently acquainted with the verb "to weigh" to appreciate its real meaning; very few are able to apply it in all its moods and tenses.

I was not aware that I had wandered into psychology, and except the statement be intended as a delicate implication that I am meddling with matters outside my province—for Mr. Abbott evidently ranks me as a chemist, not as a colleague—it seems to have little bearing on the situation. "Psychology" is a big word, but one which is too often synonymous with cant, and at best covers a very limited and imperfect doctrine. When, for example, I see questions set seriously for grown-up teachers to answer, such as "How does a child learn to localise sensation on different parts of the surface of his body?" "how is it that a child will, in general, remember best what he thoroughly assimilates and understands?" it seems to me that the sense of the ridiculous must be wanting in the professed psychologist, and that we may well be content to work on a more practical plane. If teachers spoke the honest truth of the value to them of present-day psychology, probably most would confess their agreement with the view expressed by the great Clothes-Philosopher when he said, "The 'Euchiridion of Epictetus' I had ever with me, often as my sole companion, and regret to mention that the nourishment it yielded was trifling." At least, all those who had learnt to weigh would fully sympathise with the remark of his editor thereon: "Thou foolish Teufelsdröck! How could it else? Hadst thou not Greek enough to understand thus much? *The end of man is an action and not a thought*, though it were the noblest."

We sadly need a Teufelsdröck at the present day to remind us how little we do to prepare our youth for the field of action, to expose the shams of our ultra-academic system, and to move the public to enforce their abandonment. Fortunately he has given us an unsurpassed definition of man, which may well be taken as a guide and the foundation of a practical psychology. Says Teufelsdröck: "Man is a tool-using animal. Weak in himself and of small stature, he stands on a basis, at most, for the flattest-soled, of some half-square foot, insecurely enough; has to straddle out his legs lest the very wind supplant him. Feeblest of bipeds! Three quintals are a crushing load for him; the steer of the meadows tosses him aloft like a waste rag. Nevertheless, he can use tools, can devise tools; with these the granite mountain melts into light dust before him. He kneads glowing iron as if it were soft paste; seas are his smooth highway, wind and fire his unwearying steeds. Nowhere do we find him without tools; without tools he is nothing, with tools he is all."

How little we bear this in mind—how little we do to teach him to use tools or to understand their use. In schools the time is still given up almost exclusively to the worship of the *Euchiridion*. "The tyranny of the book," as Professor Meiklejohn aptly terms it, still reigns supreme. The psychology which has so long justified such a procedure cannot be worth much, and I have no desire to wander into it. I prefer to stick to my balance and to advocate that boys and girls should stand up during a large part of the school day at some kind of work bench, instead of always cramping their chests and intellects at the desk. Mr. Abbott will therefore understand that I cannot accept lines and angles drawn and measured on paper as being anything more than rational exercises in arithmetic and geometry. They certainly do not deserve to rank as science.

As to Nature Study, to accuse me of being an objector to true Nature Study is a gross perversion. What is put forward under the name at the present day is, for the most part, sheer pretence—more often than not, empty twaddle, unworthy to be called *study*. Almost invariably, except in the case of the few enthusiastic with innate capabilities, the teaching is of such a character as to merit the reproach addressed to the *Hirt* by the *Jäger*, in the delightful little German fable at p. 156 of your April issue:

"*Ihr scheint, Euren Sohn manches wohl gelehrt zu haben, aber eins habt Ihr vergessen. Warum habt Ihr ihn nicht auch*

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gewöhnt, das Innere zu erforschen bevor er dem Zutrauen sein Herz öffnet? Hätt' er das weiche Mark inwendig geprüft, er würde der täuschenden Rinde nicht getraut haben."

"*Das Innere zu erforschen*" should be the essential aim of all true Nature Study. A charming article on Experimental Natural History, by Professor Miall, was published by you in February, 1899, which from beginning to end is a dissertation on the *Erforschungslehre*. "I would have every science lesson take the form of an inquiry" [writes Professor Miall, in his concluding paragraph. "Our work is only scientific in spirit when it springs from the desire to know of our own knowledge some definite thing concerning which our curiosity has been moved."] I also have been an advocate of "Juvenile Research" for years past, and in the paper referred to, dealing only with the most elementary measurement work, I say, "As far as possible, it must always be some little piece of juvenile research work that is undertaken, some little problem that is worked out." How, then, can Professor Miall and I be at variance? As a matter of fact, we are both working towards the same end, we are alike engaged in Nature Study, but approaching it from somewhat different points of view. Ultimately there will be a fusion of nuclei, and let us hope that Karyokinesis will then give rise to a healthy progeny. The main difference between us arises from the fact that, on the physical side, we have long attached more importance to measurement work than have biologists: nothing is needed to bring us into complete harmony but the recognition of the truth that all science must have a quantitative basis.

"Most true is it," says Teufelsdröck, "as a wise man teaches us, that 'Doubt of any sort cannot be removed except by action.'" The aphorism is worthy of consideration by teachers.

Huxley, in his essay on the Study of Biology, addressing the "more or less acute lay and paper philosophers who venture into the region of biological controversy," gives them the advice: "Get a little sound, thorough, elementary instruction in biology." I would venture to urge teachers to eschew psychology until they have had a little sound, thorough, elementary training in quantitative experimental work—and until they know what R-e-s-e-a-r-c-h spells. It must soon be that such knowledge will be exacted of teachers as essential to competence.

HENRY E. ARMSTRONG.

The Colloquial Teaching of French.

I WAS surprised at the absence from your Correspondence columns this month of all comment upon the somewhat conflicting series of articles that formed the special feature of your March number. Will you kindly allow me space for reference to two out of the many points raised?

Prof. Strong and Monsieur Barlet both advocate colloquial teaching. The former urges that it should be adopted with beginners and that beginners should be taught by a "superior teacher." The latter rather ignores beginners, and waits till the pupil "enters a higher form" before he begins the teaching "in earnest." So entire is one's agreement with Prof. Strong on this point, that one is tempted to see in Monsieur Barlet's course a compromise forced upon him by the prevailing conditions of his school work.

The *successful* teaching to classes of average schoolboys of a spoken foreign language is, under the best of conditions, an extremely difficult task. Only too frequently are the conditions of the worst; and from compromises of various kinds the teacher has no escape. These conditions are largely within the control of the headmaster; and, speaking broadly, I believe that at the present day a chief cause for so much continued failure in the school teaching of Modern Languages is to be found in the insufficient consideration given by headmasters to the essential requisites of successful colloquial teaching. These requisites are: highly efficient teaching in the lower forms; fairly homogeneous and carefully graduated classes; separate provision for late beginners and the less apt; reasonable frequency of lessons; and unconcern as to results in the popular public examinations, at any rate "Preliminary" and "Junior."

Particularly in the lower forms is it imperative that the requisite conditions should be satisfied. For there pupils are exclusively dependent upon the teacher for the very employment of their time. Since it is the ear and the tongue that have to be trained, rather than the memory, no amount of book-work industriously attempted, in or out of class, will compensate for teaching not provided, will bring the late beginners or those of inferior aptitude into line with their seniors in the study. The foundations must be laid for all, and laid in much the same way. If the requirements are not met, if the essentials in the case are ignored, the whole fabric collapses and the colloquial teaching results either in all-round failure or the favouritism of a few.

There are plenty of teachers to-day very well able to teach languages on thoroughly enlightened lines; but the modern teacher is no better able than the ancient Hebrew to make his bricks without "straw." If the present cry for better results in Languages teaching is to be met, headmasters must more fully consider what colloquial teaching implies.

I have encroached so far upon your space that I can but lightly touch upon the second matter. Monsieur Barlet, in his advocacy of colloquial methods, says that "the great point is to find a suitable book for conversation." He adds that "in the hands of a clever man any book may do," and proceeds to recommend Lafontaine's Fables. But are all teachers clever enough to use Lafontaine in the manner he suggests? And, if they are, is a three years' study of the Fables the course best adapted to English pupils and masters for combining educational benefit with linguistic work? I cannot think that it is.

Prof. Strong would have "the child, after the age of ten, read consecutive pieces to be explained in the language taught." This, to *school* teachers, must seem a counsel of perfection. But, holding that colloquial teaching should be begun "in earnest" in the lower forms and that pupils "entering a higher form" should be already trained to a moderate extent to understand, to speak, and to read, I certainly think that the boy of 14 may commence the study, in French, of a History of France; the boy of 15, continuing that study, begin upon a French-written book of the Geography of France and its colonies and of the Government and Institutions of the country; the boy of 16, still continuing what has been begun, enter upon a study of the chief literary periods and the great writers. Personally, I find Duruy's "Petite Histoire Populaire" extremely useful. I hesitate to recommend the book I am at present using for the Geography and Institutions of France; for although admirably conceived, it is too voluminous and not simply enough written for the purposes required. Most teachers will prefer to make their own choice both of books and of methods for the study of the literature.

A systematic and progressive study, from IVth form to VIth, of the nature suggested seems to me the natural sequel of the colloquial teaching begun in the lower forms. It affords the fullest scope for linguistic training, practical and theoretical; and it is educative in the highest sense, tending precisely to that "training of the intellect, of thought, and of the mind," which Monsieur Barlet claims to be "the goal set in the school room to the study of modern languages." It would check the deluge of annotated tales and tale-*lets* in which publishers and "editors" alone appear to delight; and it might, in time, permit of the appearance in your columns of articles on "Common Exami-

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nation Errors" slightly more interesting and instructive than those we have read there this month and last.

Royal Grammar School, Newcastle-on-Tyne, April 13th.

A. STALLWORTHY.

An Automatic Magazine Club for Schools.

EVERY school whose staff numbers not less than eight ought to have a magazine club. By its means not only are teachers kept abreast of movements political, social, educational, and otherwise, but it affords them a ready and pleasant method of becoming interested in and conversant with matters outside their ordinary professional work and worry. Anything which tends to temporarily take the teacher out of himself and thereby broaden his views ought not to require to seek encouragement. Higher senior forms might with advantage, too, successfully run a club on the lines indicated in this article. The financial part of the business does not enter into the matter at all, because the total monthly cost to each member need not be more than the price of a single magazine.

For this each member may have at least eight of the best magazines for not less than three nights each, and also get another as his own property when the end of the month comes.

The difficulty of organisation, however, appears to be the main reason for the scarcity of such clubs in our schools, and yet when conducted on the following lines all these difficulties vanish, and the magazines circulate almost automatically.

The first thing to remember when about to start such a venture is *not* to appoint a committee, because the certainty with which anything is carried out varies inversely with the size of the committee, and because experience seems to prove committees to be the best means for shelving any good scheme.

Let some energetic member of the staff or class ascertain how many of his or her colleagues would care to join such a club. Once this is done, let him obtain from them a list of the magazines they would care to see adopted. Suppose, for the sake of simplicity, he has got twelve members, and they have suggested fifteen magazines. Evidently the number of magazines must equal the number of members. He must then send round his twelve members a voting sheet as follows:—

VOTING LIST.

(*Please put a cross after the five magazines you prefer to read.*)

		Mr. A.	Mr. B.	Mr C.	Mr. D.	Mr. E.	Mr. F.	Mr. G.	Mr. H.	Mr. J.	Miss K	Miss L.	Miss M.
1	*Strand*	X				X		X		X			
2	*Winasor*	X	X	X			X		X	X	X	X	X
3	*Scribner*	X		X	X		X				X	X	
4	*Practical Teacher*		X			X		X		X			X
5	*Pall Mall*	X			X		X			X	X		X
6	*Cornhill*		X		X								
7	*Pearson's*	X	X			X						X	X
8	*Review of Reviews*			X				X	X				
9	*Chambers'*			X	X	X		X		X		X	
10	*Cassell's*			X		X		X	X		X		
11	*Munsey's*		X				X		X				
12	*School World*				X		X		X		X	X	X

And the voting may take the above form.

It will be seen that while two have voted for *Cornhill*, nine have honoured the *Windsor*. This means that the *Cornhill* does not obtain a place on the list, and Messrs. B—— and D—— are asked to put their cross after another magazine. The former perhaps may take THE SCHOOL WORLD, and the latter the *Review of Reviews*. In order to make up for the evicted *Cornhill* an alternative magazine requires to be added. This of necessity is the *Windsor*, so that due allowance may be made for its nine readers. The magazines are now balloted for, so as to determine their final ownership. Let us suppose the ballot results thus:—

1. *Strand* ... Mr. B.
2. *Windsor* ... Mr. C.
3. *Windsor* ... Miss K.
4. *Scribner* ... Mr. A.
5. *Munsey's* ... Miss L.
6. *Practical Teacher* Mr. H.
7. *Pall Mall* ... Mr. J.
8. *Pearson's* ... Mr. D.
9. *Rev. of Reviews* Mr. F.
10. *Chambers'* ... Miss M.
11. *Cassell's* ... Mr. E.
12. *School World* ... Mr. G.

We now draw up the Circulation List by which the journals ought to rotate automatically and finally reach their respective owners at the month's end. As shown, we divide the month into four weeks. This allows for school holidays, and for the irregularity with which the various magazines are published. We give each member two magazines a week, and they ought to be changed on Monday and Thursday mornings. Friday is unsuitable, because if the magazine be forgotten it cannot be passed on that week. It will be seen that the last column of names tallies exactly with the ballot.

When this list is drawn up, its proper position is some conspicuous place, so that the teachers may themselves see *from whom* they should get a magazine, and *to whom* they should pass one.

CIRCULATION LIST.

	First Week.		*Second Week.*		*Third Week.*		*Fourth Week.*	
	Monday	Thursday	Monday	Thursday	Monday	Thursday	Monday	Thursday
Strand	Mr. A.	Mr. J.	Mr. E.	Miss K.	Mr. G.	Mr. C.	Miss L.	Mr, B.
Windsor	Mr. E.	Mr. A.	Mr. F.	Miss L.	Mr. H.	Mr. D.	Mr. J.	Mr. C.
Windsor	Mr. B.	Mr. G.	Miss M.	Mr. H.	Miss M.	Mr. A.	Mr. C.	Miss K.
Scribner	Mr. C.	Miss L.	Mr. D.	Mr. F.	Miss K.	Mr. B.	Mr. G.	Mr. A.
Munsey's	Mr. F.	Miss K.	Mr. J.	Mr. D.	Mr. B.	Mr. H.	Mr. A.	Miss L.
Practical Teacher	Miss L.	Mr. B.	Mr. G.	Miss M.	Mr. C.	Mr. J.	Mr. E.	Mr. H.
Pall Mall	Mr. D.	Miss M.	Mr. A.	Mr. E.	Mr. F.	Miss K.	Mr. B.	Mr. J.
Pearson's	Mr. J.	Mr. E.	Mr. B.	Mr. A.	Miss L.	Miss M.	Mr. F.	Mr. D.
Review of Reviews	Mr. H.	Mr. C.	Miss K.	Mr. G.	Mr. A.	Mr. E.	Mr. D.	Mr. F.
Chambers'	Mr. G.	Mr. D.	Mr. C.	Mr. J.	Mr. E.	Miss L.	Mr. H.	Miss M.
Cassell's	Miss K.	Mr. F.	Mr. H.	Mr. C.	Mr. J.	Mr. G.	Miss M.	Mr. E.
School World	Mr. M.	Mr. H.	Miss L.	Mr. B.	Mr. D.	Mr. F.	Miss K.	Mr. G.

To see how beautifully this list works, let us consider Mr. A——'s case. We notice that he gets exactly, and in regular order, eight magazines, including the five which he preferred to read. *Scribner*, which was his property by ballot, also falls to his lot on the last Thursday of the month. He is thus never without a magazine. He gets more than he bargained for, and from the great variety of magazine matter he must needs get some articles which are perfectly adapted to his tastes.

The magazines in the above list cost from the school stationer exactly six shillings, and hence each member pays only three farthings for each of the magazines read.

If the magazines are passed on to some charitable institution, the members not only improve and broaden their minds at

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small cost, but they may perhaps lighten the lot of some less favoured individuals, and thus get the full value of joy by sharing it with others. It will be seen that school journals do not enter extensively into the above club. This is as it should be, because nowadays an educational magazine is part and parcel of a teacher's working tools, and as necessary to him as the most recent text-book on the subject he professes to teach. The practical teacher ought therefore to become—as every successful teacher is—a regular subscriber to some up-to-date educational periodical.

JOHN T. PEARCE.

Leith Technical College.

On Scientific Terminology.

MY experience as a student and teacher of elementary science has led me to perceive and to deplore a certain laxness in the use of the words "law" and "prove" in science. The word "law" in its scientific sense is a difficult one to define, but it seems to be one whose definition should be exactly stated, generally accepted and rigidly adhered to. The definition which permits the application of the word to two such widely different things as Newton's "laws of gravitation" on the one hand, and Bode's so-called "law of planet distances" on the other, is surely too wide and comprehensive. In the former case we have a statement which explains the motions of the heavenly bodies with exactitude, and one which admits of no exception; to which, indeed, an exception is not only not known, but to scientifically trained minds of the present day inconceivable; and in the latter case we have a statement of a relation between planet distances which might possibly be accidental in nature. Again, we must regard the facts of chemical combination as certainly true, though, as Mill points out, they are not inconceivably untrue. The general expressions of these facts are called, reasonably enough, "laws," and Dalton's explanation of them is rightly called a "theory." But Avagadro's statement, that equal volumes of all gases contain the same number of molecules, postulating though it does the unproven existence of ultimate particles, is generally called the "law of Avagadro."

Many other similar instances of the use of the word "law" in science might be cited. These few will, however, suffice to establish the great and, as I think, excessive comprehensiveness of the definition of the word.

Of dictionary definitions the most satisfactory available is perhaps that of the "Century Dictionary":—

"A law is a proposition which expresses the constant or regular order of certain phenomena or the constant mode of action of a force; a general formula or rule to which all things or phenomena within the limits of a certain class or group conform precisely and without exception; a rule to which events really tend to conform."

The following quotation, among others, is appended:—

"'Law' means a rule which we have always found to hold good, and which we expect always will hold good."—Huxley.

The suggestion which I wish to make is that the word "law" in science should be used, as far as possible, in its most intensive sense, *viz.*, that of the second definition, "a rule admitting of no exception"; and that other words, such as "principle" and "rule"—which latter proverbially admits of exception—should be used for relations of a less exact and constant nature. It is perhaps too much to expect that the use of such well-fixed expressions as "Boyle's law" (which is a law only in the sense of the third definition) should be discontinued; but in many other connections alternative words might be adopted. Thus we might speak of the "periodic principle" instead of the "periodic law"; of "Bode's rule" instead of "Bode's law"; of "Avagadro's hypothesis" instead of "Avagadro's law." The changes suggested would, I believe, be helpful to students in enabling them to form clearer and better ideas of the nature of the various relations and propositions of science.

A full discussion of the subject, embracing, as it would have to do, discussions on the criteria of truth, of the opposed views of Dr. Whewell and J. S. Mill on the "doctrine of the inconceivability of the converse" as a test of truth, and of the many side-questions connected with the matter, would be out of place in a short letter. But the investigations which my difficulties in the matter have caused me to make have brought before me very forcibly the great importance of the study of logic to science students and teachers. I should like to see the subject of Logic re-introduced in some form or other into the Science examinations of London University.

There remains for discussion the use of the word "prove." It is common with science teachers to tell their students to "prove" Boyle's law or the law of Archimedes by making a simple experiment. The use of the word "prove" in this connection is surely wrong. And though it is difficult to say what word ought to be used, it seems to me that the word "test" describes more exactly the nature of the process, and might be used more appropriately than the word "prove." The result of one experiment cannot be taken as proving such a generalisation as either of those mentioned.

In conclusion, I should like to raise the question as to what is the exact nature of a scientific definition, and to enquire whether it is possible to prove by experiment a statement which follows directly from a definition. In an Elementary Science paper set at a recent Matriculation examination at London University, candidates were asked to describe an experiment showing "that equal forces produce equal momenta in equal times." I shall be very happy to be enlightened if I am wrong when I say that this question is a clear case of *petitio principii*, for equal forces are defined as those which produce equal momenta in equal times. I had perforce to admit to my students that the answer to the question was beyond my wit: an unfortunate admission to have to make, as examination candidates will always find it easier to believe that an examiner shows his incompetence by rejecting the wrong candidates rather than by setting foolish questions.

T. L. HUMBERSTONE.

Bosworth Grammar School,
April 4th.

What is the Duty of an Assistant-Master?

YOUR correspondent, "H. J. H.," has raised a fine point when he speaks of the difficulty occasioned whenever an assistant-master is called upon to act in opposition to his convictions. Before he submits, rebels or resigns, I should advise him to "examine himself truly" whether he has real justification in preferring his own opinions to those (generally) of a more experienced man. If he finds he can confirm his views by reference to those of some admitted authorities upon the matters in question, why not carefully prepare his case and, with all due respect, lay it before his "head," asking him at the same time to kindly help in the solving of the difficulty by explaining his reasons for such and such orders? As "H. J. H." truly says, headmasters are, as a rule, more sensitive of the honour of their schools than is any one of their assistants, and I cannot conceive that any headmaster worthy of the name would find any objection to the above plan or refuse to discuss the matter. For my own part, I should only be too glad to discover that I possessed that somewhat *rara avis*, an assistant-master who had the interest and credit of the school genuinely at heart, and should warmly welcome any sensible suggestions for the benefit

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of the pupils. Should this method fail to convince or remove the objectionable rules, my advice is, resign. I also prefer to sign myself

HEADMASTER.

April 2nd, 1901.

I SHOULD not be surprised were "H. J. H." to receive a number of letters from headmasters desirous of availing themselves of his valuable services as an assistant. It must be refreshing to a headmaster to find a man taking so exalted a view of his profession as to be anxious about questions of principle. Unless I am much mistaken, the majority of assistant-masters are in the position, chiefly owing to their own folly at the Universities (and elsewhere) of being concerned with pecuniary rather than moral obligations. A headmaster cannot be blamed if he refuses to take seriously the opinions of men whose interests are necessarily narrow and selfish.

With regard to the point raised by "H. J. H.," I think it is an assistant's duty to credit his "head" with the honest desire to promote the interests of the school; otherwise loyal co-operation is out of the question. Viewed in this light, an assistant's responsibilities, when differences of opinion between him and his headmaster arise, certainly do not necessitate his resignation. After all, however much of the actual work of the school devolves upon the assistant-masters, the (generally speaking) greater experience of a headmaster should have its due weight in the decision of points connected with school discipline and management. Resignation is a violent way of emphasising a protest, and "the Lord was not in the earthquake."

E. W. HURST.

Nonconformist Grammar School,
Bishop's Stortford,
April 9th.

IT seems advisable to add a word or two to the arguments put forward by "H. J. H." in your April number, on the vexed question of differences of opinion between a headmaster or headmistress and an assistant. The issue involved is rarely clear enough for either side to take up a definite position on a mere principle of right or wrong, and the personal equation is a more disturbing factor than "H. J. H." seems to admit. Still cases have arisen in which assistants have been called upon to support a policy condemned by experience, and the continuance of which must lead to results having a serious and grave influence for evil on more than one generation of schoolboys. But it is not easy to convince others of this view of the policy; and the self-respecting man, if he honestly believes that this result is inevitable, will not hesitate, whatever the effect on his future career, to resign rather than allow himself to become a party to maintaining such a course of action. But such cases are happily rare.

The ordinary differences of opinion which are continually recurring in school life, and from which arise the more serious cases already referred to, can generally be avoided by a greater knowledge on the part of each of the other's position. The assistant cannot work effectively if he is working in the dark, and he has a right to look to his superior officer for a large share of his confidence and his views on the relation his work bears to the other work done in the school. If this work does not rise to the standard of the school, then the head should, of course, call upon his assistant to remedy the defect, and, as a rule, he will not call in vain. The idea that the assistant-master is a machine paid to turn out certain work by the term should be an exploded one in these enlightened days, for the best work is only obtained where there is the greatest freedom of action consistent with an agreeable and easy co-operation. On the other hand, the headmaster must feel certain of obtaining from his colleagues immediate and accurate accounts of what is taking place in the school life as it presents itself to them, remembering that the opinion thus obtained has intrinsic value, and is of the highest importance to himself in obtaining a broad and reasonable estimate of the discipline and moral tone of his school.

To conclude, I should urge, as a remedy for what is undoubtedly a terrible evil in our educational system, a greater freedom in the exchange of opinion between the headmaster and his assistants and the more genuine desire of each to liberally interpret what may be the opinion of the other.

WALTER J. WOOD.

The Grammar School,
Bury, Lancashire,
April 16th.

English Composition for Preliminary Candidates.

I SHOULD be much obliged if you would inform me if there is any book published suitable for the English Composition of the Cambridge Preliminary Local Examination. Of course you would know that a piece is read out twice, and that candidates have then to reproduce it. The reading, I think, occupies about seven minutes altogether. The pieces in all books which I have seen are either too long or too short.

A. K. SHAPCOTE.

County College, Hereford,
April 10th, 1901.

Rules of Rhyme, Rhythm, and Metre.

MISS REES would probably find everything she requires in "English Grammar Past and Present," by J. C. Nesfield, M.A. (Macmillan.) 4s. 6d. M. M.

I WOULD advise Miss Rees to examine "Practical Handbook of Elocution," by Rose I. Patry. (Swan Sonnenschein.) 1s. 6d.

E. W. H.

PRIZE COMPETITION.

No. 13.—English Essays written to Skeleton Provided.

EXAMINER'S REPORTS.

Boys over 15.

THE essays in this class were generally satisfactory. Most of the essays exhibited a correct proportioning of the various parts, and the coherence of ideas was well maintained. The chief failing was a poorness of vocabulary. Mistakes of spelling and syntax were too frequent, and in a few cases the handwriting left much to be desired.

The best essay was that sent in by W. G. King, Kensington Coaching College, W., though the style is occasionally too florid. Special mention must be made of the essays by:—B. P. Williams, A. Harris, G. M. Hilbery, T. H. Beckett, W. H. King, J. W. Hepple.

Girls over 15.

The standard of merit in this class was very much higher than in the corresponding class of boys. The greater number of competitors and the average excellence of the essays point to the conclusion that mistresses have a higher conception of the importance of the English essay than their colleagues of the male sex. The task of awarding the prize was very difficult. So much care had evidently been bestowed on the composition of the majority of the essays that very minute points had necessarily to be taken into account in weighing the claims of several competitors for first place. The essays of the following competitors are the best of many very creditable ones:—Constance

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Pearson, Ethel E. Feather, Helen McNabb, Isabella C. Morrison, Gwen M. Williams, Mona J. Drysdale, Edith Fletcher, Gladys Sherrard, Nellie Hughes, Barbara Little, Eva F. Barker, Nellie Cowles, Jessie Walker, E. Audrey Sparke, Lily Goodwill, Marjory Stephenson.

After careful consideration, we have decided to award the prize to Mona J. Drysdale, Mortimer House School, Clifton, Bristol.

Boys under 15.

The examination of the essays in this class produced a feeling of disappointment. This was due to the carelessness which was so characteristic a feature of the majority. In very few cases was sufficient attention paid to the "Skeleton Essay" provided; divisions of the subject were either ignored or received but scant recognition. The hints that were given with regard to the highwayman's motives and his personality were not generally utilised; the conclusion of the encounter was, as a rule, far from being dramatic, and the courage and cowardice of individuals were not well brought out. In other respects, too, the essays showed signs of carelessness; the new moon had, in more than one case, unusual powers of illumination; snow was made to appear and disappear in a wonderful fashion, and the number of travellers sometimes varied in the same essay.

The prize is awarded to E. L. Gibbon, Manchester Grammar School; the essays of A. Pietzsche, F. Wholly and R. H. J. Sasse deserve commendation.

Girls under 15.

There were some two hundred essays in this class; the majority of them were very fair, and several were distinctly good. Neatness was a pleasing feature of nearly all, but greater attention should have been given to paragraphing. The essays followed the outline much more closely than those by boys in the corresponding class, and very little carelessness was manifested. One competitor, however, received her invitation in March! We have selected the essays of the following girls for special mention:—Hilda Foster, D. R. Wilson, K. Winifred Marriage, Ethel Johnson, L. Weathersby, May Hunt, Dorothy Fitzgerald, Gwen Sizer, Connie Lee, Josie Magenis, Ella Hills, Ruth Graham, E. Matson, Elsie Gertrude Milner, Margery Cossens, Kattie Gough, Daisy Giles, C. M. Herrick, Mildred Clarissa Babb, Edith Buckle, Agnes Yates, Maggie Rankin, Mary Gibson, Mary Blackhurst, I. Hadland, Mabel Marriott-Dodington.

Three of these wrote very pleasing narratives. K. Winifred Marriage gave a graphic account of an Esquimaux party; D. R. Wilson's essay was well illustrated by pencil sketches in the margin; Ida Hadland, Holland House, Beverley, contrived, in the form of a letter, to give so vivid, interesting and coherent an account of her Christmas party that I have no hesitation in awarding her the prize.

List of Schools, &c., from which Essays were received.

Sherborne School for Girls; Holland House, Beverley; St. Paul's Vicarage, Burslem; Sunnyside School, Fleetwood; St. Michael's School, Norton, Malton; Trinity House, Southport; Lady Berkeley's School, Wootton-under-Edge; Ursuline Convent, Waterford; Monmouth High School; The Modern School, East Grinstead; The Convent, Birkenhead; Old Manor House, St. Margaret's, Ipswich; Nôtre Dame, Brixton; Girls' Grammar School, Berkhamsted; Far Hill, Stroud; Crieff House, Eastbourne; Mortimer House, Clifton; St. Monica's Convent, Skipton-in-Craven; St. Bernard's School, Newton Abbot; Grosvenor School, Wokingham; Girls' High School, Bayview, Wigtown; Higher Grade School, Cambridge; Greenway House School, Tiverton; The College, Stoke Bishop; Bellerive Convent, Liverpool; Church High School for Girls, Leek; "Beechcroft," Richmond, Surrey; Higher Grade School, Colwyn Bay; Newcastle House, Lewes; School of Science, Clay Cross; Mercers' School, London; Grammar School, Manchester; County School, Bedford; Praetoria House School, Folkestone; Queen Mary's School, Walsall; Bottwnog County School; Intermediate School, Newport; Liverpool College; Radley College; Boys' Modern School, Leeds; Wilsford House School, Devizes; University College School; Grammar School Morpeth; St. Cuthbert's College, Worksop; Ursuline Convent, Wimbledon; Buckingham Palace Academy, Portsmouth; Convent of Nôtre Dame, Northampton; Hampton House School, Redland, Bristol; Miss Harrison's School, Brighton; Kensington Coaching College; Bickerton House, Birkdale, Southport. A few essays were received without any indication of the name of the school.

No. 15.—Short Stories of School Life.

It is a common complaint of schoolmasters and schoolmistresses that most of the popular stories concerned with school life show a want of knowledge, on the part of the writers, of the peculiar relations between teacher and taught, and the conditions under which they live and work. There is much justification for the criticism. The novelist generally has only the misty recollections of his own school days to guide him. Acting schoolmasters and schoolmistresses, however, certainly possess minute knowledge of the many aspects of school work and school politics, even if their powers of expression are more limited.

If teachers could be persuaded to describe some real or imaginary incident of school life in the form of a short story, it should be possible to secure light sketches free from ridiculous improbabilities and reflecting with a minimum of distortion some scenes or incidents experienced or suggested by teachers or pupils. In the hope of securing at least an approximation to this ideal, we offer two prizes, *one of two guineas* and *one of one guinea*, for the two best short stories in which the characters or incidents are connected with school life. The stories may be imaginary or based upon fact, but verisimilitude, as well as literary style, will be taken into consideration in judging their merits. The stories should be written on one side of the paper only, and should reach this office on or before the last day of June, accompanied by a coupon from the May or June number. The length must not exceed 1,500 words.

The award of the Editors is to be final, and will be announced in the August issue, when at least one of the prize stories will be published.

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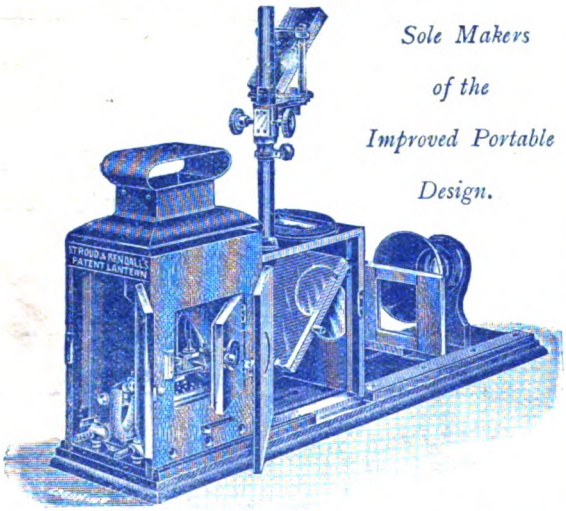

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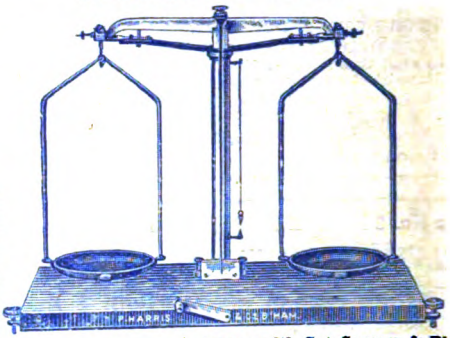

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THE

School World

A Monthly Magazine of Educational Work and Progress.

VOL. III., NO. 30.] JUNE, 1901. [SIXPENCE.

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NO. 30. JUNE, 1901. SIXPENCE.

ENGLISH LITERATURE A GREAT DISCIPLINE.

By P. A. BARNETT, M.A.

IN these days, when the school curriculum is being discussed by so many intelligent and unintelligent people as a thing of high importance, literature, as such, is called upon to vindicate its claims, not only to a first place but to any place at all on the Time Table. It was not always so. The best educated people in the world, the Greeks of Plato's time, never seem to have doubted that Music, which was practically pure literature, was the staple food best fitted for the all-round development of man and therefore prime material for the school; and the literary tradition has been maintained, more or less, down to our own day. Its apparent temporary eclipse is really part of an importunate problem in economics, and the arguments advanced against its use as an instrument of education, and therefore of school solicitude, will probably be found to depend for such force and validity as they possess on the desperate conviction that the "struggle for life" leaves us little time to get the best out of life itself.

What concern has the school with literature? About other subjects, as they are called, the Man in the Street speaks without hesitation. Arithmetic helps us in our accounts; reading aloud is a necessary means to ensure vocal intelligibility; writing we must have if only that we may sign our names to receipts; chemistry is particularly helpful if we are engaged in soap-making, dye-mixing, and even in the preparation of our food, particularly beer; physics moves mountains for us; woodwork gives us deftness of fingers . . . . and so forth. These and other common subjects of instruction have a comprehensible bearing on the tasks by which we gain our *livelihood;* and may be made to have even a distinct value, though in this sense we hardly appreciate them, as a gymnastic for training intellect and making character, that is, for promoting fulness and variety of *life.* They have, on the one hand, particular applications to which is attached a price amongst things marketable, and, on the other, they may be made serviceable, under proper conditions, in the cultivation of capacity.

But it is at once the glory and, in the eyes of the Man in the Street, the defect, of pure literature that, if it has the largest possible bearing on life, it has very little direct relation to the means of making a living. It is the most disinterested form of human activity. Although at its best it is the spontaneous expression of the highest human thought and feeling, it aims at no contingent advantage, at nothing beyond itself. And human nature is so restless and insatiable, that to ordinary folk what does not immediately lead to something saleable seems "useless." The teacher of literature who does not see the comprehensiveness of his subject is pretty certain to err in his treatment of it. It is because we do not really know what it means that we "teach" literature so badly, if we truly "teach" it at all. Most of us are content to teach *about* a work of art, but never to bring our pupils a bit nearer *the artist's point of view,* though this is the soul and essence and purpose of any literature teaching that is worth the name. What is chatter about pigments and perspective compared with a picture-in-itself? What are philology, history, archæology, biography, prosody, orthoëpy, compared with the poem as its maker left it?

What literature should be to us, and what we should try to make it be to our pupils, will be understood best if we try to realise what it is in relation to the great artists themselves. How did "King Lear" appear to Shakspeare? How does it appear to us? *The Lord is my shepherd, therefore shall I lack nothing. He shall feed me in a green pasture, and lead me forth beside the waters of comfort. He shall turn my soul, and bring me forth in the paths of righteousness for his name's sake. Yea, though I walk through the valley of the shadow of death, I will fear no evil, for thou art with me; thy rod and thy staff comfort me.* What did the old Hebrew *mean* when he wrote that? Why did he write it? What does it mean to *us?* Why should we, and how can we, put ourselves and our pupils at *the artist's point of view?* By examining it word for word, and splitting it up in order to make a table of analysis? Surely not.

The highest development of literature is poetry. It is the highest because it is, in fact, that which covers the widest area of intellect and feeling combined into expression. It is the simplest

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because it deals with the great facts and emotions of life common to all mankind; we call it subtle sometimes just because it treats these things in a manner so moving and penetrating that we are astonished at the depth of things long familiar to us but imperfectly appreciated till we see with the eye of the great artist. For the great artist makes the world big for us. The great dramas, for instance, or the great psalms, are merely great ways of seeing life; the little things of our experience are by them generalised, made immensely significant, mean more to us. We repeat them to ourselves, and we feel that our grip on things is truer; we escape from the littleness of details, stand away from ourselves, and see things in their bigger, truer, more ideal relations. *We are such stuff as dreams are made of* . . . . that is how Shakspeare generalises for us the inexpressible feeling of the unreality of things that sometimes besets us; we see one great aspect of the world through his eyes. *Violets dim* expresses for ever and for all of us the tender and subdued beauty of the little flowers.

Now we must bear in mind that poetry to the poet is of the same nature as play. It is an end in itself, just as is the play of the child. It builds no bridges, mixes no dyes, makes no valuable soaps, constructs no machines. The finest combined expressions of feeling and intellect are just play. And we must notice, too, that though the orderly or artistic expression of emotion aims at no contingent advantage, it can yet be justified *ex post facto* in that it promotes life, which is in itself a good thing. It makes life fuller, grander, more significant, less petty. Nothing gives such a value to life, makes it mean so much, as the finest literature. For the love of literature (or of art) is the highest pleasure of which we are capable. We shall see soon how this acts as a test for the use of the teacher.

The generalising quality of real literature is a kind of orderliness, or economy, or active principle of selection. For, as we have seen, the spring of artistic production is primarily the simple pleasure of the artist; he has no afterthought, his art being essentially an end in itself. But this pleasure, this emotion, is not mere romping or hysteria, for it results in such an orderly expression of emotion that it can be understood by other people and intelligibly communicated to them. The little child who plays, plays a game; he is an artist; he constructs a whole which is comprehensible. The dramatist, whose work we actually call a "play," feels, reflects, reconstitutes his experience for us, and represents it in an orderly way. Pleasure, feeling, æsthetic experience, admiration, or whatever you like to call the state of mind of the artist or lover of art, is, as a feeling, incapable of analysis. It is both spontaneous and final. The artist does not *prove* himself into making a fine poem; he makes it because he likes it. Readers do not arrive at their delight in Shakspeare or Milton by any process of logic; they feel, simply. But when we have got the work of art, we may be able to feel its meaning more or less acutely; a little child may like to read "Macbeth" and even act it, but I am sure that I am much nearer Shakspeare's conception than the child is, however far away I still remain.

We are already in a position to lay down certain general maxims for the use of the teacher. It is, first of all, his duty, and a very early duty, to sow the seeds of a liking for literature. He may be able to do little; but it is hardly possible to implant a first love for literature in adult life. We must get our children, according to their capacity, to admire the things that are worthy of admiration, and those things are worthiest of admiration that make life large and beautiful and give it meaning; the noble thoughts, the lovely traditions, the moving incidents, set forth in books. Our pleasures are a better test of our real selves than is anything we do for our daily bread. What pleasures can fill life to finer purpose than to see it as great men have seen it? The abounding beauty of earth and sky and flowers are, for instance, more deeply and truly felt if we put ourselves at the point of view of Wordsworth. The magnificence and grandeur of the world are more to us when we roll the sonorous lines of Milton on our tongues. The majesty and subtlety and tenderness of things are seen most movingly through the eyes of Shakspeare. The actual pageant of events is more real when it unfolds itself to us as it did to Gibbon, and, in his degree, to Macaulay. For the function of literature in human economy seems to be to stir up in people the inarticulate sympathies of goodness and beauty, to unite feeling and intellect into a kind of spiritual perception, as the electric spark combines oxygen and hydrogen to form water. It saves us from vulgarity, the vulgarity which fails to perceive the real size and relative importance of things. Literature as poetry simplifies our bewildering and disparate sensations and emotions by seeing the great and magnificent beyond the little. As history, it simplifies by presenting events in a great sweep, the present as a part of the past. In philosophy, it simplifies by celebrating the great laws at work in the smallest manifestations of force, the movements of planets in the fall of an apple. About all these things, to be lost in details is to lack perception, is, in one sense or another, to be vulgar.

The opening move of the teacher is to excite feeling over the things and for the ends which he thinks best. This is exactly what is done by the mother, God's own teacher, when she dangles a coloured ball before her baby and says "Pretty, pretty!" She thus begins the æsthetic education of her child in the most "scientific" way. She does no less when she tells him grotesque or heroic stories; she is making his mind play about the things that give it growth, in a manner suitable to its stage of development. And there are two important practical lessons involved in this. The first is the existence in all human souls of the common basis of capacity, and its correlative, the common claim of all human souls to education. It is perfectly true that human beings vary and

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develop differently as childhood is left behind; that is a fact of the greatest, the gravest, importance. But these two circumstances together, the absolutely common basis of capacity and the undoubted subsequent divergences, seem to justify the claim of all children to *equality of opportunity*, particularly in early stages of education, as far as economic and social conditions will permit. We ought to give our poorest children the best we can in their early youth just because such enormous differences develop later. We do not concede equality of opportunity with men to beasts, for beasts lack the basis of capacity which all men alike possess; but it is a distinct danger to the human society which we constitute if any human capacity capable of healthy development is stunted or perverted. And on this hangs a further practical consequence. That part of education which affects the commonest and most distinctively human capacities is "æsthetic"; that is, the training in the appreciation of the great arts that appeal mainly to feeling. Of these it is literature that covers the largest area. It follows that, if you starve the "æsthetic" capacities in youth, you inflict the most disastrous, the most dehumanising, injury on your pupils; you refuse them the development and satisfaction of that part in them which brings them nearest the angels; and that part, too, which carries within itself the strongest guarantees of permanence, for, above all other activities, the æsthetic and the ethical activities create a new appetite for things like themselves.

The next practical lesson to be drawn from the mother's first unconscious step in æsthetic and literary education is that our admiration for lovely things is largely a matter of obsession and habituation. When the mother says "Pretty, pretty!" she is *bidding* her child admire; and when she says to him, later on, "Isn't that a nice story?" she is again impressing on him what we call admiration; she is obsessing his mind, and thus setting up in it the conditions favourable to a habit. Here is another lesson, then, of abounding importance. The chief business of a teacher of literature is to get his pupils to feel; and his chief channel will be infection. He must, above all things, bring them into the state of admiration. This he cannot do by any process of proof, of logic. His chief teaching formula must in the end be "Isn't this beautiful?" This, indeed, is his Alpha and his Omega. He must *begin* by inspiring admiration, and his chief *end* must be regarded as attained when he has increased the material and the capacity for admiration. Between the beginning and the consummation of the educational process lies the field of criticism, which, on the one hand, justifies the admiration excited because it tends to elevate and promote Life, and, on the other, gives a certain fixedness and permanence to æsthetic emotion by laying bare some of its superficial modes of action.

From these considerations may be derived certain important practical maxims which will be treated on another occasion.

POETRY IN THE SCHOOL.

By W. HALL GRIFFIN, B.A.

Professor of English Language and Literature, Queen's College London.

"ALL inmost things," remarks Carlyle, "are melodious, naturally utter themselves in song. The meaning of song goes deep." So deep, indeed, that one recognises the truth, if not the whole truth, in the oft-quoted words of Fletcher of Saltoun: "I knew a very wise man that believed that, if a man were permitted to make all the ballads, he need not care who should make the laws of a nation." We all realise how instinctive it is when deeply moved to burst into song as we recall the inspiration derived by the downcast Spartans from the strains of Tyrtæus; the enthusiasm which found expression in song during the revolutionary days in France; the influence of the verses of Arndt in stimulating the growth of national feeling among Germans, or the spell cast by the homely lines upon John Brown during the great anti-slavery struggle in America.

It is evident enough that our youngest scholars cannot enter into the national feelings which underlie songs of this nature; but the love of things melodious is present even from earliest days, and our educational publishers have therefore sought to provide fitting song-food for our pupils almost from infant days. Messrs. Longmans, for instance, have issued an elementary graduated "Series of Recitations,"[1] which begin with verses by Robert Louis Stevenson and others suited to the taste of the very youngest, and lead gradually upward by way of "Young Lochinvar" and the ever delightful "Good news from Ghent," past the less widely-known "Paul Revere's Ride" to the heights of "L'Allegro," and a few scenes from Shakespeare. It is, perhaps, difficult to overestimate the influence on the child mind of being brought into close contact with good verse early in life, of committing it to memory and of being trained to recite it. Children enter heart and soul into a verse narrative. What is told of Walter Scott at the age of six is true, in its degree, of many another child. "He was reading a poem to his mother when I went in," says Mrs. Cockburn; "I made him read on: it was the description of a shipwreck. His passion rose with the storm. 'There's a mast gone,' says he; 'crash it goes; they will all perish.' After his agitation he turns to me. 'That is too melancholy,' says he; 'I had better read you something more amusing.'" During childhood's days the world of imagination is very closely identified with what we are pleased, in later life, to term the "real" world—whatever that may be—so that what we afterwards come to regard from an artistic standpoint is to the child an intense reality. I have known a boy of seven or eight who could not endure to hear the story of "Macbeth" to its conclusion; he called aloud,

[1] Twenty-three in number; four for each "standard," from I. to V., and three for Standards VI. and VII. Each of these penny or twopenny cards and booklets has notes and a brief biographical introduction.

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"Stop, mother! I do not like it; that man was a bad man!" Even Aristotle himself might have tried in vain to "correct and refine" that child's "passions" by means of the "terror and pity" excited by tragedy. Terror, indeed, was manifest enough; pity had as yet no place in the mind. Imaginative powers differ in children as in older people, but is it not true that in the main they are apt to be far more vivid than in later life, just as the memory is stronger? It is more easy to learn by heart, and what is learnt is more readily retained. A Macaulay, indeed, even in later life may glance at a poem as he waits for the coach, and years afterwards may recall it entire. But most of us have too little of the Macaulay in this respect. If I may speak for myself, I must own that all the poetry I can remember—*i.e.*, remember as I remember multiplication tables, poetry which has become part and parcel of my mental being—I learnt in early life. What I have acquired since does not cling to me; it is apt to elude me just when most wanted.

Should we not, then, be very careful what we supply to the imagination and the memory of the child? Can there be any gain—indeed, anything but loss—in asking a child to associate with the name of a poet like Shelley the poor "Verses on a Cat," which I see quoted in a recent excellent selection issued for schools? Is it well for a young reciter to speak thus of himself and of a hungry pussy:—

> Good folks, I must faithfully tell ye,
> As *I am a sinner*,
> It waits for some dinner
> To *stuff out its own little belly*.

And then to proceed to speak of

> the various evils
> Which, *like so many devils*,
> Attend the poor souls from their birth.

Is it wise to ask a thoughtful child to learn such words? Are there not children enough who would *see* those "devils" attending them only too vividly? What had Charles Lamb to say about "Witches and other Night Fears"?

School life develops somewhat freely a use—often harmless enough in the main—of colloquial speech and of slang. But is it well to quote lines from a great poet in which they are introduced, and to make a child speak of the satisfaction a cat has in devouring a rat, and then to add the reflection:—

> And it were as good
> Some people had such food
> To *make them* "*hold their jaw*."

"The man who never made a mistake," it has been truly said, "never made anything." We do not say Shelley made a mistake in writing these lines—that depends upon his purpose in so doing: we do say that the editor made a mistake in introducing such poor material into a good volume.

Then as to parodies. Should we teach them to our children? We hold not. I have known the fine speech of Coriolanus to Aufidius, "My name is Caius Marcius," &c., to be spoiled for years, and through it, to a great degree, the whole play, on account of the laughter raised by a schoolboy freak in substituting, "My name is Norval," &c. It is true enough that in modern education we are aiming at realising—perhaps too much so—the late Laureate's hope,

> Let *knowledge* grow from more to more.

Is it equally certain, especially for the younger generation, that we sufficiently bear in mind the line that follows:—

> But more of *reverence* in us dwell?

Parodies—even the delightful parodies of Calverley—are better left for later life, till one is so far sure of one's love for the original that no parody can shake it, or till one has judgment enough frankly to own that the parody may be the better "poem" of the two. My blushes are not visible as I avow that I prefer Owen Seaman's lines to some of the originals of Sir Lewis Morris.

Now there may be occasions when, even for the beginner, it may be well to quote Tennyson's "Brook" and Calverley's "Tinker:"

> I loiter down by thorp and town,
> For any job I'm willing;
> Take here and there a dusty brown,
> And here and there a shilling.

But one's experience points rather to the fact that such occasions are *very* rare; and that, as a rule, the teacher's stress has to be laid in the other direction, both for old and young, in the endeavour to make the true sacredness of literature felt.

There are fortunately several excellent school books of a more elaborate character than the booklets already mentioned, which supply adequately enough the demand for child verses. Among more recent issues are some by Messrs. Macmillan,[1] the first and more elementary of whose volumes of "English Poetry for Schools" contains ninety-nine poems. The selection is in the main as judicious as it is representative, for the book contains verses by Blake, Coleridge, Cowper, Goldsmith, Hood, Kingsley, Longfellow, Scott, Shakespeare, Wordsworth and others. At the end of the volume will be found a useful Note by the Principal of the Khedivieh School, Cairo, Mr. A. V. Houghton, on Recitation, insisting upon its importance of giving hints as to how to make it most useful. The selection was compiled partly with a view to use in Egypt, and some of the hints, therefore, which are contained in another appendix, would be needless for a teacher in England. The Second Part, by the same editor, Mr. Cookson, is an excellently chosen body of selections, and its appendix of "Short critical and biographical notes on the Poets" whose works are quoted is helpful in itself, and also serves as an index, for reference is made to all the poems quoted. A further index of first lines makes it easy to see exactly what the volume contains.

[1] "English Poetry for Schools." Two volumes. Book I., Primary, 1899; Book II., Secondary, 1900.

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Messrs. Macmillan[1] have also issued a selection of English patriotic poetry called "Poems of England" (1900, 2s. 6d.), a volume of thirty-nine excellently chosen poems selected from sixteen poets, from Drayton to Tennyson. These include, besides Drayton's Agincourt ballad, the noble speech of Henry V. before that battle, from Shakespeare, a speech so much loved by Macaulay who was born on that October day—the "Feast of Crispian;" indeed, one can never read those lines without one's pulse being quickened, and one being made to feel somewhat as Sir Philip Sidney felt when he listened to "Chevy Chase"—"I never heard the old song that I found not my heart more moved than with a trumpet." Some of the noble sonnets of Milton—"soul-animating strains, alas, too few!"—and of Wordsworth, find a place in this inspiring volume. Well would it be for our boys and girls to be made to realise that—

> ——————in our halls is hung
> Armoury of the invincible knights of old;
> We must be free or die, who speak the tongue
> That Shakespeare spake—the faith and morals hold
> Which Milton held.

And that—

> Not once or twice in our fair island-story,
> The path of duty was the way to glory;
> He, that ever following her commands,
> On with toil of heart and knees and hands,
> Thro' the long gorge to the far light has won
> His path upward, and prevail'd,
> Shall find the toppling crags of Duty scaled
> Are close upon the shining table-lands
> To which our God himself is moon and sun.

Messrs. Nelson[2] have also just issued a cheap and good little volume of "Ballads of British History." As its name implies, this is not confined to *English* history, so that the noble "Scots wha hae" finds a place here; but, including as it does ballads only, its scheme does not allow of Miltonic or Wordsworthian sonnets; and one hardly likes to express the feeling one has in turning from Tennyson's "Revenge" in Messrs. Macmillan's volume to Gerald Massey's "Sir Richard Grenville's Last Fight." The volume, however, is excellent of its kind, and contains thirty-nine ballads, chronologically arranged as to subject, from the time of Cæsar to that of the death of Elizabeth. Each ballad has a concise and helpful introductory note.

Decidedly the best, so far as we are aware, of recent issues of school poetry is the "Laureata," edited by Mr. Richard Wilson and Mr. Edward Arnold,[3] a most attractive volume, which might adorn any shelf. Why should so many school books look so very school-ey? This volume contains selections from forty-seven poets, and is sufficiently up to date to include verses from Swinburne, Mr. Henley, Austin Dobson, Kipling, and Mr. Newbolt, whose stirring "Admirals All" we cordially welcome. A piece from William Morris is included, and thirteen poems from Tennyson; and especially glad are we to see Matthew Arnold's noble elegy on his father, the "Rugby Chapel." This volume is a distinct addition to the literature with which we are now dealing; and, with a self-abnegation wholly laudable, the editor has refrained from adding a single note, except for a concise and alphabetically arranged biographical index of eight pages dealing with forty-six out of the forty-seven poets whose works are quoted.

1 Still another volume by the same firm is "Chosen English," Selections from Wordsworth, Byron, Shelley, Lamb and Scott, 1898. 2s. 6d. This contains prose and verse, and has a sensible preface as to the spirit in which to study literature.

2 "Nelson's Supplementary Reader," No. XIV., 1901. Price 4d.

3 "Laureata," a book of poetry for the young. Edward Arnold. No date. 1s. 6d. pp. 223.

THE DICTATION LESSON AND SPELLING.

By ARTHUR BURRELL, M.A.
Principal of Borough Road College, Isleworth.

CAN anything new, useful, suggestive be written about our old friend Dictation? I fear not; but perhaps we may occasionally find it useful to ourselves to ask ourselves, "What are our own opinions? and what are our own practices?" Some of our practices are strange. That long-suffering animal the schoolboy surely never ventures to ask himself, "Why do they do these things to me?" If he did, he might fairly give to his mother or his father such an account as this of his dictation lesson:—

"The Nigger (a nickname for his master) hadn't got any history ready for us to-day; I expect he hadn't swotted up his dates: so he said we were to have dictation. Well, I don't mind dictation, as a rule. You see, first of all, I can spell pretty well; so I get good marks. Then, you needn't bother yourself. You've only got to shout out, 'Please, sir, you're going too fast,' or 'Please, sir, will you read that sentence again?' He's awfully good, the Nigger. He goes as slow as you like, and reads any amount all over again. He generally takes a book from our library and stands reading it for some time. Then he comes on a real fine bit (a regular knockdown piece), and he says sweetly, 'Now, boys, I've got an easy piece for you.' Then I know he's got some fancy words, and I'm ready, and some fellows groan. We all like the Nigger; he doesn't mind our cheeking him a little.

"But to-day we had a corker. Last week it was rot: nothing harder than *seize* and *separate;* any fool knows those. But to-day he got a bit from a big book which someone left in our room by mistake. We copied it out for you, to see if you can stump the girls with it. Don't say I sent it. I don't know what it means. He called it

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"'An Exerpt (I don't think that's right) from Palgrave's "Normandy and England," vol. i., p. 409.'

"'Charlemagne began to give the compound names from which the rhombs of the mariner's compass are known, and from every circling point of the horizon the wind wafted an enemy. Christians and half Christians, Mahometans and idolaters, diverse races and diverse tongues—worshippers of Thor and Odin [I was all right so far, I got *rhombs* right by a fluke, but now I began to go wrong, and some fellows shut up writing], Promo, Chrodo, Jeslebog, Zernebog, Belbog, Zutebor and lion-visaged Radegast, Swantowit with four heads, triple-headed Triglaw and genial Siewa, the many-breasted teeming Siewa, with the bunch of grapes in her hand, Gascon, Vascon, or Escalduanæ, Celt or Breyzad, Jute, Norsk or Dansker, Ishmaelite, Moor, Saracen, Serb, Wend or Obotrite, Lech, Zech and Magyar—all conjoined with the infatuated Carlovingian princes and their more infatuated subjects [Brown wrote 'fat-head subjects '] in effecting the Empire's destruction.'

"Then he corrected it and marked it. He wrote it all out on the board and copied every word carefully. He couldn't spell half of them himself. We corrected our own papers, and I only had fifteen mistakes, which I think was good. Then some fellow's parents came to see the Nigger, and when he came back he took the marks, and the bell rang.

"Now I like out-of-the-way words like *Troglodyte*, and *variegated* and *asymptote*. I know all that sort; but I don't think this was fair, and I told him so. He grinned and said, 'You should watch my lips. It's a lesson in reading off distinct speech, my boy.'"

Of course the reader, if he gets so far, will object that no such piece of prose was ever given, and probably he will be right; but he dare not say that my schoolboy was wrong in incidentally accusing some masters of one or more of the following sins:—

(*a*) Of giving long strings of uncommon and useless words.

(*b*) Of stopping whenever required to do so.

(*c*) Of making no further use of the lesson than to enter marks in a book.

(*d*) Of resorting to dictation as a means of filling an hour.

Now the dictation lesson is primarily a test lesson. First of all, it tests writing—not the mere regular formation of letters in words, but the regular formation of letters in words which are dictated at a certain speed. As boys grow older, the speed of the dictation must be gently increased. In every examination in dictation a speed-limit (*i.e.*, a slow limit and a fast limit) should be laid down.

Secondly, the lesson is a test in spelling. We wish to discover if the class can spell accurately the ordinary words which they meet in their reading-books. I am not speaking of words such as my friend notices in his letter, *Troglodyte*, *asymptote*, and *variegated* (though I might concede the last): I am not speaking of catchy words such as *thief*, *separate*, *foreign*, *practise*, *scythe*: I refer for the moment to the common words which his reading-book will supply him with, whether it be a history book, a geography book, a fairy tale, or "Robinson Crusoe." The lesson must find out for us which of our boys are careless in noticing the ordinary word; for the spelling of the ordinary word is a matter of observation, not of learning by heart, and should be observed and then unconsciously learnt *in* the reading lesson.

Thirdly, the lesson is a test in accurate writing. This is by no means the same thing as accurate spelling. Boys there are who will without fail spell for you a large number of catchy or even of out-of-the-way words; but the same boys will write *the* for *they*, *on* for *no*, *strugglin* for *struggling*; they will write "I saw saw him," "good almighty," "an onourable man." These errors, which are really copyist's errors, and which are found more frequently when boys are set to copy a page, are part of the mis-spellings of a dictation lesson. I take it that the lesson, then, has for its aims:—

(*a*) The training in writing legibly at a tolerable speed.

(*b*) The training in the spelling of ordinary words.

(*c*) The eradication of copyists' errors.

This being so (if it be so), how is the test lesson to be conducted, how are the exercises to be corrected, and how are the mistakes to be treated? Surely the first rule we must make for ourselves is that we, and not the class, should make the pace. We are to be the judges of the capabilities of the boys, not they. A slight suggestion: have we always taken it?

There is a consensus in favour of the master's reading the whole passage through before his class writes anything. There seems to be no harm in this in the case of younger boys: with boys of fifteen it ought to be unnecessary.

The next rule which we should follow is that we should speak distinctly, but not more distinctly than in our ordinary lessons. Some "dictaters" make such helpful grimaces over their words that their classes rely not on the ear, but on the eye—the eye is turned to the reader's lips and rapidly transferred to the paper. It is excellent training for the eye, no doubt; but it is the training of a lip-reader. It would be a salutary direction to these grimacers to make them give their dictation with their backs turned to the class. Even then, however (putting aside the enormity of such a suggestion), the careful mouthing of each syllable would defeat the aim of the lesson. If it be objected that we do not speak distinctly in giving our ordinary lessons, by this objection we stand self-condemned.

The phrasing of the dictation is all-important. Perhaps I may be allowed to refer here to that golden rule on which all good reading, repetition, public speaking and lecturing depends. Put in

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its crudest and bluntest form, the rule stands thus: "Pay no attention to commas, semicolons, dashes, or notes of exclamation; but stop at a picture." An illustration will best convey my meaning.

A short passage for dictation (wrongly phrased):

"It happened one day (pause) that (pause) a party of youngsters (pause) found themselves (pause) on the brink of one (pause) of these pools (pause) in the very centre of (pause) the lake (pause). It was a rocky (pause) basin (pause) of considerable depth (pause)."

The same passage (rightly phrased):

"It happened (pause) one day (pause) that a party of youngsters (pause) found themselves on the brink (pause) of one of these pools (pause) in the very centre of the lake (pause). It was a rocky basin (pause) of considerable depth (pause)."

It would be quite possible to make an easy piece like this almost unintelligible even to a grown-up audience by incorrect phrasing. So much for the conduct of the test-lesson. We come now to the correction of mistakes (both of spelling and of punctuation).

Some teachers correct the mistakes themselves, devoting their attention for the fraction of a minute to each paper. In a class of thirty boys, when the dictation is over, twenty-nine are unoccupied while the first child's paper is being examined.

Surely it is better for the teacher to spend his first two minutes in rapidly inspecting the writing and in attending to nothing else. The correction of the mistakes may then follow; the whole class begins to work again.

It does not seem to be a matter of much importance whether the children correct their own papers (using blue pencils distributed at the beginning of the lesson) or whether they change their papers with one another. Boys do not resent the second method as a slur on their honesty, though it does amount to a feeling in the teacher's mind that they are not to be thoroughly trusted. On the whole, it would seem preferable that a boy should underline the mis-spelt words in his own paper. If marks are given (and boys will do anything for marks) the teacher very soon knows the one or two whom he cannot trust, and to them he will of course direct his attention. The whole list of mis-spelt words, easily gained from the boys themselves, may be written on the board and re-written again and again by the careless. Oral examination in these words will follow. It is very easy to give the good spellers fresh work to do.

But there should remain time for the study of those words which we may call uncommon, *provided always that the children have come across them in their reading*. If the reading lessons are conducted well, if each class-room has its little library of books sufficient in number for each child to have a copy of each book read, there will be no dearth of uncommon words—the spelling of which is a matter of eye-training, to be grasped in the course of the reading lesson. As these words one by one become known, first through the reading lesson, and then again in the oral work following the dictation lesson proper, they cease to be uncommon, and fall into the category of ordinary words. Such words are *geography*, *arithmetic*, *mathematics*, *mischief*, which present no difficulty to the memory, though to the careless eye they may convey no impression of their size and make.

Our last difficulty is with the catchy words. And it is well at first to make a list of such terrors; by constant repetition alone, oral and written, we may hope to overcome them. Their number is not legion, and though they generally defy rules, the tenacity of the memory, helped by an occasional mnemonic device, will prevent the boy from ever going wrong. We all know these enemies: some of us even till our dying day are afraid of some of them: and *siege* and *seize*, *recede* and *proceed*, *harass* and *embarrass*, *receive* and *believe*, have been known to puzzle senior wranglers and doctors of divinity.

I fear I have travelled beyond my field: but one thing at least I have forgotten. Why should not every piece chosen for dictation be interesting?

THE EDITED BOOK.

IN one of those humorous moods which sometimes seize even the wisest of mankind, Sir Walter Besant some months ago let fall the information, for the benefit of a world of literary aspirants, that the way to rival the income of a bishop was to write a successful school-book. It would be a very interesting study, if one could only come by the necessary data, to determine what are the average net profits of the episcopate, and also what proportion of school books are unsuccessful. One fancies that few budding novelists' mouths would water, however, if they knew the truth; though the present enormous output of tentative fiction, whereby authors seem to completely exhaust their vein in at most two volumes, might thereupon be gradually (and healthily) restricted. But that these suggestions have a way of suggesting others, and that all of them have an air of the ribald, not to say the profane, in an article dealing with a highly specialised topic, they might be pursued at length, and perchance not without instructiveness. Inasmuch, however, as our subject is "The Edited Book in English Literature Teaching," all such side issues must be dismissed with the very merest mention.

The Edited Book has taken its place in educational schemes with so much of an air of permanent possessorship that he would be a bold person who should venture to dispute its claim. Every month presents the world with new specimens, some good, some bad, and a majority which are indifferent in varying degrees; ranging over a very extensive literary field, with Shakespeare, and sundry politico-idealistic treatises at one

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extremity; with very easy, and indeed, almost trivial subjects at the other; so that it comes to be one of the mysteries of the art of editing how even a school book may be made into a somewhat ponderous volume, not in proportion to the cubical dimensions of the text, but by the voluminous ingenuity of its treatment. Unquestionably, editing is an important branch of literary art. Nobody undervalues it when a Dr. Birkbeck Hill edits Johnson, or a Professor Masson edits De Quincey, or a W. E. Henley produces an edition of Burns or of Byron, and in every case secures the enconium of "monumental" for patient labours. But these and many parallel cases are mainly of significance to the world of advanced scholars or leisured *literati;* and because the editor and his public start from a somewhat common ground of appreciation and ability, probably are less exacting than they appear, and rather entail labour of research than anything else,—except, of course, adequate learning. With the editing of a school book these conditions are altered. There is no natural, mutual, ready-made sympathy upon which to count between the author—who probably never dreamed of such a fate—and the schoolboy who studies him as a task. It is indeed lucky if any deep sympathy exists between the author and the editor; for an edited school book must be the work of a professional teacher to be worth much; and schoolmasters are among the most unliterary of mortals, so far as the present writer knows them. But in the happy, fortunate case of an editor who cares for his subject, or is otherwise able to produce a really good school book upon a literary subject, it must be admitted that he has mastered a very difficult branch of literary endeavour, and if he does not achieve at least the *net* income of a bishop, he richly deserves it.

For the question of what should be the distinguishing characteristics of a good edited selection is not by any means an easy one to decide until a very large number of volumes thus treated have passed through the same hands, and been weighed one against another. To find any one school book even in the total output of two or three years which deserves to be set aside as plainly *the* ideal volume of edited literary matter is a singularly difficult task. A reviewer of such books is often compelled to remember Ferdinand's words, "For several virtues, have I liked several" —volumes; but the test of absolute perfection, or even of relative ideality, is hard to apply. Some books are spoiled by treating a very inconsiderable text to a vast amount of commentatorship—"one poor halfpenny-worth of bread to all this intolerable deal of sack"—while some others refuse to shed any illumination worth the name at all upon the dark places of the text. (A current edition of the Waverley Novels is gravely open to this objection.) Some others appear to show what pains respectively can be spent upon introductory matter and what upon the index, and in these cases there is generally a very accurate inverse proportion established between these two features. If the introduction is meagre, the index looks as if the compiler had spent days and nights of toil upon it. If the index is an unimportant affair, the introduction often introduces everything that is necessary, and a great deal that isn't. As to "notes" also, editors vary between two egregious extremes. Some are short, choppy, and abominably dry; others are diffuse, and continually threaten to run to the dimensions of a treatise, which (as notes are an indispensable element of any edition) serves at least to show between what widely extended points a discriminating editor is free to range. Minor points, such as the inclusion of glossaries, maps, illustrations, and other helpful elements, are likewise subject to the very greatest "diversities of administration;" and in the matter of appendices it is as absolutely hopeless to discover any guiding rule as it is to determine the actual worth of the many that are published, by any other means than a disclosure of those results which, fortunately for ordinary mortals, are secrets locked within the breasts of examiners.

It is, however, out of this chaotic welter of varying procedure that some profitable conclusions do at length discover themselves. The most important feature, after all, in any edited selection is the notes; and, in case of such topics as demand more extended treatment than a note can supply, the appendices. Probably the most unique and the most serviceable examples of how to manage this department of a book such as is here under consideration may be found in Mr. A. W. Verity's editions of Shakespeare and Milton, published by the Cambridge University Press. In all of these volumes hitherto published tact in the selection of matter, completeness of range, thoroughness of treatment, and a gift for compression and condensation, which nevertheless does not end in obscurity, are so distinguishably manifest that editing school books with Mr. Verity seems to have become almost a fine art. The majority of volumes in Messrs. Macmillan's "English Classics" series are of the same kind. Appendices are more rare, and the notes are, on the whole, more brief in these cases, but as models they will repay any amount of imitation, and can hardly be beaten in any respect.

Next to the elucidation of points arising out of the text, a matter in which any schoolboy can best amass his own information, and where a master's assistance is mainly a matter of oversight, the introduction to any edited schoolbook deserves great attention. So long as the present plan obtains of teaching literature by snippets, the introductory matter supplies the only means by which any selected masterpiece can be really connected with the broad field of literature as a whole. It is by means of it also that the essential characteristics *of any work or writer* can be in some degree brought to the notice of the pupil; and through it, and it alone, can the teacher really approach the selected subject in such a way as to find his own knowledge of it either stimulated or in need of revision. The capabilities of a really well-written introduction are of the very widest kind. It can render more service to the teacher than even the

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notes can to the pupil, and therefore, well written as it in every case ought to be, it is a far more important matter to find out how an introduction is planned. Those editorial prefaces which merely give a more or less brief account of the life of the author, with some remarks upon the subject matter and perhaps a chronological table or two (unfortunately quite too common as they are), may be one and all contemptuously dismissed as inadequate. To offer such books to any but very juvenile pupils is absolutely unworthy of the dignity of any literary subject, and whatever can be said or done to induce a diminution in their number and their use, anywhere at least except in junior forms, is so much pure service to the cause of literature; which can never be really advanced as a branch of education unless the very highest faculties in criticism are exercised to explain its bearings and relations.

It is, therefore, by no means the ideal of an introduction to an edited book that it should be simply written or simply planned. On the contrary, its scheme should be as comprehensive as possible, and its matter should be rather addressed to the intelligence of the master, though not entirely thereby overshooting that of the pupil. It should be certainly as remarkable for its condensation as for its range, and even the remoter considerations of criticism should not be left unnoticed in it. A section dealing with the life of the author of the text is, of course, inevitable, and this affords a judicious editor plenty of scope for steering skilfully between a bald biographical outline and a heavy compilation of judgments passed by other people upon him. Some estimate of the text is also a desideratum; and here the critical faculty of the editor is most frequently shown to be wanting. Analyses are common enough as parts of the introductory scheme of edited volumes, and they usually fall into the third place; only too frequently, however, they would be better omitted. For some reason or other, the typical analysis is not usually crisp and short enough. The present writer recalls many that tend to become little treatises by themselves; and in any case it would seem that an analysis is most serviceable when it is most condensed. If the ideal may be suggested here, which is sometimes reached, though rarely, the true analysis takes up the main points in large type, the secondary points in somewhat smaller, and the leading tertiaries in italics; and the numerous others which spring out of all these, the pupil should be encouraged to make for himself. Indeed, if the analysis could be narrowed to the very smallest dimensions compatible with any sort of completeness, the case would be by so much the better, because the best of all uses to which the Edited Book can be put in class work is to get pupils to make analyses for themselves; and these should increase in complexity with each reading of the work, where that is possible more than once or twice during preparation. After the analysis usually come genealogical, historical, or bibliographical tables, most of which show infinite pains on the part of the editor, and perhaps deserve more study, and indeed would repay more, than it is usually found expedient to bestow upon them. These features are frequently of immense interest, and at least they make for the completeness and serviceableness of an edited selection. One is, however, compelled to fear that much of the labour expended upon them is hopelessly lost. If the edited masterpiece could go home with a boy when he leaves school, and if it were the foundation of much future solid literary study, these things would bear their due recompense of reward. As things are, they do not; and most undeservedly.

One section of any good introduction should contain criticisms and comparisons on the style of the author; and this may or may not be included in the general estimate of which mention has already been made. When this is done, the most common procedure seems to be to make the matter as simple as possible; to address the pupil rather than the master; and if the master be not able to do the addressing himself, that would be quite in order. But in conformity to the view urged throughout this article, the writer would like to suggest that in every feature of the introduction the same idea of avoiding the merely simple should be resolutely adhered to; while, of course, the absurdity of trying to rival the depth or acuteness of a M. Taine, a Walter Pater, or a Matthew Arnold, is not in the least to be entertained. But if, without absolutely getting out of range of a pupil's intelligence, an introduction to a good school edition of a literary masterpiece should stimulate a teacher to present something to his pupils in the nature of original first-hand opinion, and to teach them to discriminate in matters of style and in principles of criticism, it is to be hoped that a real literary gain would accrue to both, and more solid literary results would be achieved than even examination successes can show.

Many other questions cluster round the Edited Book; and this article has already reached one limit of its length without affording any hope that they could be dealt with before reaching the other; though that has been most generously set. They must, therefore, be deferred to future discussions.

A. T. Q.

To the Poet, as to every other, we say first of all, *See*. If you cannot do that, it is of no use to keep stringing rhymes together, jingling sensibilities against each other, and *name* yourself a Poet; there is no hope for you. If you can, there is, in prose or verse, in action or speculation, all manner of hope. The crabbed old schoolmaster used to ask, when they brought him a new pupil, "But are you sure he's *not a dunce?*" Why, really one might ask the same thing, in regard to every man proposed for whatsoever function; and consider it as the one inquiry needful: Are you sure he's not a dunce? There is, in this world, no other entirely fatal person.—THOMAS CARLYLE.

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MAUD; ODE ON DEATH OF DUKE OF WELLINGTON; AND LIFE OF MACAULAY.[1]

By J. A. NICKLIN, B.A.
Late Scholar of St. John's College, Cambridge.

THE WAR POEMS.

BOTH "Maud" and the "Ode on the Death of the Duke of Wellington" are war poems. But the Ode was written in 1852, when England was possessed with a grave distrust of the Prince President, and a serious apprehension of French invasion, while "Maud" was published in 1855, when a war which had involved England in alliance with the French Empire commended itself to Tennyson as eminently just. The note of 1852 was the fear of mob-rule and anarchy; the note of 1855 was the desire for some overpowering emotion of generous patriotism which would save the nation from the infesting plague of corrupt selfishness. Tennyson has often been blamed for a reactionary sentiment which exalted the military spirit. While the ardour of 1852 has been condoned, as prompted by a righteous instinct of self defence, the same ardour in 1855 has been uncompromisingly condemned for its want of ethical justification. Such criticism is perhaps open to the suspicion of confusing poetry and politics, and, by a literary anachronism, reading the judgment of 1901 into the national feeling of 1855. It must be remembered that Tennyson —though his large and philosophical outlook drew him to anticipate a time when

> — the war-drums throbbed no longer, and the battle-flags were furled
> In the Parliament of man, the Federation of the world—

had, in some respects, the temperament of the man of action. Friends like Edward Fitz Gerald regarded him as a Viking strayed by error into a prosaic world, and thought his true poetic vocation was to be a modern Tyrtaeus.

THE ODE.

The note of the Ode, as I have said, is the fear of mob-rule and anarchy, and the yearning for a great soul and a strong hand to

> —— drill the whole world for the march of mind
> Till crowds at length be sane and crowns be just.

This central theme is brought out in various impressive and beautiful utterances, where the rhythmical movement harmonises perfectly with the poet's intention, and the images which he calls up blend themselves inextricably with the development of his thought. It is impossible to characterise it more felicitously than in the words of Mr. Stopford Brooke:—

> The metrical movement rushes on where it ought to rush, delays where it ought to delay. Were the poem set by Handel, its rhythmical movements could scarcely be more fit from point to point to the things spoken of, more full of stately, happy changes. Moreover, the conduct of the piece is excellent. It swells upwards in fuller harmony and growing thought till it reaches its climax in the division about Napoleon and Wellington. Then it slowly passes downwards in solemn strains like a storm dying in the sky, and at the end closes in soft spiritual passages of ethereal sound, like the lovely clouds about the setting sun when the peace of evening has fallen on a tempestuous day.

The poem is equally distinguished by its profound reflection and grave sententiousness, as in the selection of special qualities for praise—"rich in saving common-sense": "tower of strength which stood four-square to all the winds that blew"—by graphic delineation—

> —— Dashed on every rocky square,
> Their foaming charges surged themselves away,

by imagination, as in the conception of Nelson waking from his grave in St. Paul's, and wondering who was this that was coming, with the tears of a nation, to lie beside him; and by a combination of reflective and imaginative power, as in the lines—

> The path of duty was the way to glory:
> He that walks it, only thirsting
> For the right, and learns to deaden
> Love of self, before his journey closes,
> He shall find the stubborn thistle bursting
> Into glossy purples, which outredden
> All voluptuous garden-roses.

MAUD.

"Maud" has been censured, as I have said, for its outspoken militarism. It had the misfortune to appear when the national enthusiasm, which it partly reflected, had faded away in a bitter sense of the horror of war. It has been exposed to even greater censure for the morbid character of the hero. There is a very common type of mind which sneers at anything outside the ken of the average club-man as morbid, neurotic or sentimental. It would bring "Hamlet" under the same condemnation if it dared.

It must be remembered that "Maud" is consciously a study in the morbid, in the strict sense of that word. There is a brooding sense of horror and of fate in it which demands a catastrophe. The forces of heredity converge in it upon the point of suicide, madness or homicide. But the intention of the poem is lyrical, as well as dramatic. There was much in Tennyson's temperament nearly akin to the hero. He had gone through much of the same painful self-questioning; he had suffered, with the same indignation, the ruin of his career through commercial fraud, and had thus been drawn to concentrate his attention on the unscrupulous greed which seemed to be eating away the life of the nation. One of his early poems, "Supposed Confessions of a Second-rate Sensitive Mind," was undoubtedly autobiographical, and there is much autobiography in "Maud." The age felt the revelations of science as a burden and a disillusionment in a way hardly conceivable

[1] Subjects prescribed by the Board of Education, for Second Year students, for the Teachers' Certificate Examination, 1901.

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by a generation which has become cheerfully and optimistically material in, at any rate, its practice. "Nature is one with rapine," and—

A monstrous eft was of old the Lord and Master of Earth,
. . . . . .
And he felt himself in his force to be Nature's crowning race.
. . . . . .
As nine months go to the shaping an infant ripe for his birth,
So many a millon of ages have gone to the making of man:
He now is first, but is he the last? is he not too base?——

These are types of the problems which never ceased to possess Tennyson's mind with painful force.

The solution of the moral problem which urges itself into prominence here is to cast aside the hypocritical philanthropy which cloaks cowardly self-seeking, and, boldly recognising the fierce, combative element in human nature, to redeem it by a spirit of honour and unselfishness. This note is struck almost from the first in "For I trust if an enemy's fleet came yonder round by the hill," and in "The martial song like a trumpet's call . . . . singing of Death and of Honour that cannot die."

The background of the poem is peculiarly appropriate—the dark moorland, with the sea below, and the loud-resounding shore, and the lover's house, a haunted place, with the dark-red sandstone hollow in the hill. It has the same suggestion of Nature charged with human passion as the background in "Wuthering Heights."

LIFE OF MACAULAY.

As Macaulay himself has said, there is one supreme achievement in the *genre* of Biography—Boswell's "Life of Johnson." This occupies a class by itself; Trevelyan's "Life of Macaulay" can, therefore, only take a prominent place in the second class. There are many reasons why the two Lives cannot be compared for a moment. Boswell knew Johnson as intimately as possible at the period of his life when his powers were at their height, and had preserved an authentic record of Johnson's conversation. The biography of Macaulay had to be re-constructed from his Journal and letters, and the chance recollections of contemporaries. Trevelyan's personal contributions are restricted to some boyish reminiscences. But the chief difference lies in the nature of the subject of the two books. Macaulay was not a talker like Johnson. He had a brilliant power of disquisition, but no conversation. Less open in the exhibition of prejudice, and with a greater knowledge of the world, he had not Johnson's deep insight into human nature and his own heart.

Macaulay was not the great man which his contemporaries thought him; his qualities of mind were scarcely deserving of the high respect with which men like Thackeray spoke of them. But almost every observation which he has recorded in his Journal, or left in his letters, or which has been transmitted to us as falling from his lips, is worth remembering for the acuteness, honesty and wide knowledge of affairs which undoubtedly belonged to him. His private letters reveal a less obvious side of his character: a simplicity which is absent from his literary work, spontaneous kindness, domestic affection, tenderness, playfulness. The letters cannot vie in point of charm with Lamb's or Edward Fitz Gerald's, but they bear the same stamp.

The events which especially shaped the direction of Macaulay's career were his early connection with the Clapham set and the Abolition movement, his engagement on the *Edinburgh Review*, his entry into Parliament at the height of the Reform agitation, his appointment to the Supreme Council of India, his share in the framing of the Indian Penal Code, and the conception of writing the history of England from "the Revolution which brought the Crown into harmony with the Parliament to the Revolution which brought the Parliament into harmony with the nation" (*i.e.*, the Reform Bill).

The atmosphere in which Macaulay's youth was spent produced in him a deep-seated dislike of fanaticism, and of the assumption—many will think even the reality—of anything that belongs to an inner spiritual life, while instinctive loyalty to his father's memory and his early traditions prevented him from breaking away in revolt into a militant materialism. Thus the persistency with which he treated all subjects from the surface only, and maintained the attitude of a man of the world, was the result of reaction tempered by the ties of affection. The *Edinburgh* connection bound him to look at every object with the eyes of a Whig partisan, and coloured all his literary style and his intellectual habitudes. At the same time it was important as bringing him into close contact with the leaders of the party, who regarded him as the political leaders of both sides regarded Delane, of *The Times*, that is, as an equal, but not a rival. They were the more open with him that they did not feel themselves brought into serious competition with him. The characteristics of his mind are well illustrated in his dealing with such matters as the Indian Penal Code and the Copyright Bill: grasp and lucidity that were never confused by complex detail or side issues, an unmitigated contempt for anything that savoured of charlatanry or hypocrisy, and a much firmer grasp of practical results than of great principles.

The comparatively early age at which Macaulay stepped aside from active politics had no little effect on his literary work. He approached the events of 1689 with the prepossessions of 1832. He regarded the Revolution as the foundation of an edifice of Liberty which culminated in the Reform Bill. He himself attributed much of the success of his writing of history to the inveterate habit of living in day-dreams. That touches closely the purely artistic side of his work. The past was as real to him as the present. Every street and square and court of a historic town lived to him with an irresistible actuality. "Pepys, Addison, Horace Walpole, Dr. Johnson, Madame de Genlis, the Duc de St. Simon, and the several societies in which these worthies moved, excited in [his mind]

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precisely the same sort of concern as most people bestow upon the proceedings of their own contemporaries." His æsthetic limitations contributed to his success in his own line.

He viewed the works, both of man and of nature, with the eyes of an historian, and not of an artist. The leading features of a tract of country impressed themselves rapidly and indelibly on his observation; all its associations and traditions swept at once across his memory . . . But, compared with the wealth of phrases on which he could draw at will when engaged on the description of human passions, catastrophes and intrigues, his stock of epithets applicable to mountains, seas, and clouds was singularly scanty; and he had no ambition to enlarge it. When he had recorded the fact that the leaves were green, the sky blue, the plain rich, and the hills covered with wood, he had said all he had to say, and there was an end of it.

The biographer's own style—it is worth while to say, because it illustrates the character of the book itself, and of the subject—is tinctured with the artificial, rhetorical tradition of the eighteenth century. It is polished, and often graceful. But it is totally distinct from the more natural, supple, expressive and emotional style which Newman and Thackeray formed, and Stevenson, among others, has perfected.

Books to Consult.—Tennyson's "Lotos Eaters," "Maud," &c., by F. J. Rowe and W. T. Webbe (Macmillan). Stopford Brooke's "Life and Art of Tennyson" (Dent). Professor Jebb's "Lecture on Macaulay" (Cambridge University Press).

EDUCATIONAL ASPECTS OF RECENT ARCHAEOLOGICAL RESEARCH.

By F. E. Thompson, M.A.

IV.—Roman Archaeology.

COMPARATIVELY little will be said of Roman Archaeology, and this only because the results bear less directly on school-teaching. Roman History falls into three periods: (1) the Pre-historic; (2) the Republican; (3) the Imperial.

In dealing (1) with the pre-historic period archaeology has not rediscovered a lost civilisation of high order, but it has traced the movements of tribes, examined their primitive abodes, and illustrated how Rome became Rome. (2) Republican Rome, the schoolboy's Rome, so far as its material monuments are concerned, has practically disappeared; (3) Imperial Rome, in the widest sense of the terms Rome and Roman, has been, it is hardly too much to say, rediscovered; the poor outline drawn by literature has been filled in with ample details by archaeology. But of this majestic organisation the mere beginnings are dealt with in our schools. Augustus, Agrippa, Maecenas, Vergil, Horace, and Livy stand at the entrance of the bridge from the old to the new. Tacitus and Juvenal witnessed the struggle between the rising Imperial and the falling Senatorial *régime*. The Rome which was the capital of the world, which has stamped its civilisation on Western Europe, is unhappily a sealed book to the British schoolboy.

Pre-historic Italy.

In 1870 Rome once more became the capital of an united Italy. The re-awakened consciousness of a national life kindled an enthusiastic desire to discover all that could be known of the early history of the peninsula. Excavation had hitherto been carried on chiefly at Rome and Pompeii, and for the most part by foreigners. Henceforth Italian archaeology was to be the duty and privilege of Italians, and no longer the work of private societies but of the national government. *Antiquam exquirite matrem* was the watchword. Districts and roads were marked out, maps prepared, museums multiplied, periodicals established. The ground for systematic investigation had already been prepared by the magnificent Corpus Inscriptionum Latinarum, due chiefly to the labours of Th. Mommsen. There has been no lack of scientific Italian explorers. From the St. Bernard to Tarentum and Lilybaeum investigation has been carried on with surprisingly interesting results.

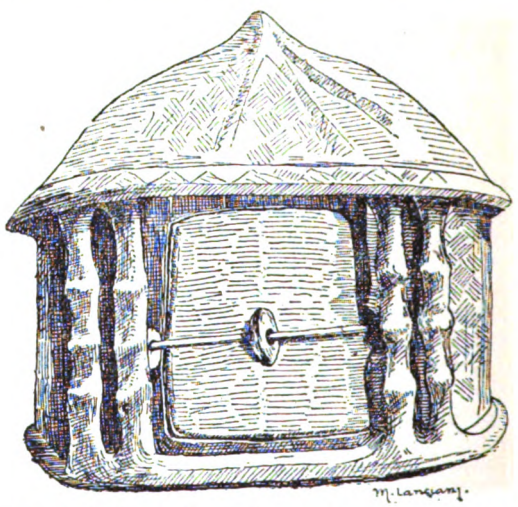

Fig. 6.—Prehistoric Cinerary Vase found at Alba Longa. It is hand-made and sun-dried, of rough terra-cotta, and shaped like a prehistoric hut. Sir John Lubbock has called these vases *hut-urns*. (In the Vatican Museum.)

The evidence for the race and customs of the early inhabitants has been found chiefly in burial grounds, pile-dwellings, and primitive fortresses on hill tops. Cremation cemeteries representing a miniature town, and divided by Cardo (the line from north to south) and Decimanus (from east to west), are as plainly Italic as the solid burial tombs, rock-hewn and painted, are Etruscan. Italic also are the pile-dwellings in the valley of the Po, and at a distance from rivers; and the pile-villages of the same character, survivals of a construction no longer necessary, the *terra-mare* of the Italian archaeologist. Such a village has been exhumed at Castellazzo near Parma, a rectangular settlement marked out, like the burial grounds, by

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Cardo and Decimanus. Italic, again, are the stone fortifications enclosing towns with hut dwellings made of straw and basket-work of the type of the Casa Romuli, in which the shepherd Faustulus brought up the founder of Rome. On many a mountain top of Tuscany can be seen the lineal descendants of these primitive Italic towns, *tot egregias urbes, operumque laborem, tot congesta manu praeruptis oppida saxis.*

For centuries before Rome was built the races of central Europe had sought a home in Italy. The Italic tribes, to be followed by the Gauls, descended by the Alpine passes. We can trace them in the valley of the Po, in the Emilia as far as Rimini, along the Apennine backbone from which they descended into Etruria and Latium. We can follow them further south in the wake of the retreating Siculi. Into the north-east corner poured the Veneti, an Illyrian race of remarkably artistic tastes, as became the progenitors of Tintorets and Titians. Their remains can be seen in the Museum of Este. Into the west corner the Italians pushed the non-Italic cave-dwelling Ligurians, whom Vergil, remembering how often they had been hunted down by Roman legions, speaks of with such noble sympathy, the *assueti malo Ligures.*

Already "Mycenean" commerce had introduced its arts and fashions into Sicily, South Italy, and up the Adriatic into the Emilia.

Meanwhile an alien people had arrived, as tradition rightly remembered, by sea from the east, the mysterious Etruscans. The riddle of their language is still unsolved, but their material remains show affinities to some civilisations of Asia Minor. They moved to the north-east across the Apennines, there to be checked subsequently by the Gauls. To the south they moved, submerging, but not overthrowing the older Italic settlements. This was in the eighth century B.C. The Italian Latins defended themselves on the line of the Tiber and founded Rome.

But the Etruscans for the time were irresistible and occupied Rome. About the end of the sixth century the tide turned. The Gaul advanced from the north, the Roman from the south, Camillus destroyed Veii, and in the course of the fourth century the Etruscan power was shattered. What an Etruscan town looked like may be gathered from the excavations of Marzobotto near Bologna, "an Etruscan Pompeii," with its huge walls, its solemn tombs, its streets and houses built about 600 B.C., and captured later on by the Gauls.

Two sites recently exhumed help us to picture the earliest Rome on the Palatine.

Quid tum Roma fuit, tubicen vicina Curetis
cum quateret lento murmure saxa Iovis?

At the junction of the Tiber and the Anio on an isolated rock are the remains of a village surrounded by a stone fence, with temple, senate-house, water-cistern, and huts once thatched and timbered. This is *turrigerae Antemnae*, Rome's earliest rival, destroyed by its jealous neighbour.

Higher up the Tiber valley in the Mons Cimi-

nius are Civita Castellana (Falerii) and the newly discovered Narce. In the eighth century the principal hill (the Palatine) of Narce was walled round with a triple zone. The houses were of a type which we see reproduced in the "hut-urns." Towards the end of the century the nearest hill was enclosed by a wall and joined to the hardier and ruder settlement by a bridge. Later on three more hills were annexed. The graves at this period are crematory and therefore Italic. Soon after sepulture-tombs appear, showing that Narce had been conquered by the Etruscans. Rome shook off the Etruscan yoke about B.C. 500, but the graves and Corinthian vases prove that the Faliscan territory remained for another century in Etruscan hands. About B.C. 400 all this comes to an end. Narce must have fallen when Veii fell, though Falerii, better situated, survived for a century.

Republican Rome.

What has become of the Rome of the Scipios and Polybius, of the Gracchi, of Cicero? Some precious fragments still remain of which Lanciani has given a list in his "Ancient Rome in the Light of Recent Discoveries." A few more are added from time to time, some of great antiquity, *e.g.*, possibly the tomb which Romulus built for himself, according to the tradition preserved by Festus and Varro; here and there a painted terra cotta or

FIG. 7.—Portrait Bust of Scipio the Elder. (Capitoline Museum.)

tile which once decorated a wooden temple of the time of the Kings: just enough to tantalise, but not to satisfy. But, speaking generally, Republican Rome has disappeared; destroyed by fire,

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used up in reconstruction, or buried under the surface.

Rome was ever an easy prey to fire. Livy (xxiv., 26) describes the great conflagration of B.C. 212, *incendium fraude factum*, following on a *late vagatus ignis* of the preceding year. Four terrible fires ravaged the neighbourhood of the Forum, *celeberrimus urbis locus*, and destroyed scores of ancient buildings, between A.D. 64 and 283, under Nero, Titus, Commodus, and Carinus.

The work of reconstruction began with Augustus. The shrine of Pietas, sanctified by its beautiful legend, made way for the Theatre of Marcellus. In restoring the so-called Temple of Mater Matuta the marble steps leading to the marble cella covered, but have not wholly concealed, the stone steps of the days of Camillus. Old streets had to be drained, insanitary areas to be cleared away or buried. Horace records an instance of the last process (S. 1, viii.):

> Nunc licet Esquiliis habitare salubribus, atque
> aggere in aprico spatiari, quo modo tristes
> albis informem spectabant ossibus agrum.

This part of the Esquiline had been a Gehenna, where the bodies of slaves, beggars, and executed criminals were thrown into pits together with the carcasses of domestic animals and beasts of burden. At the suggestion of Maecenas, Augustus covered it over with soil, and converted it into a public park.

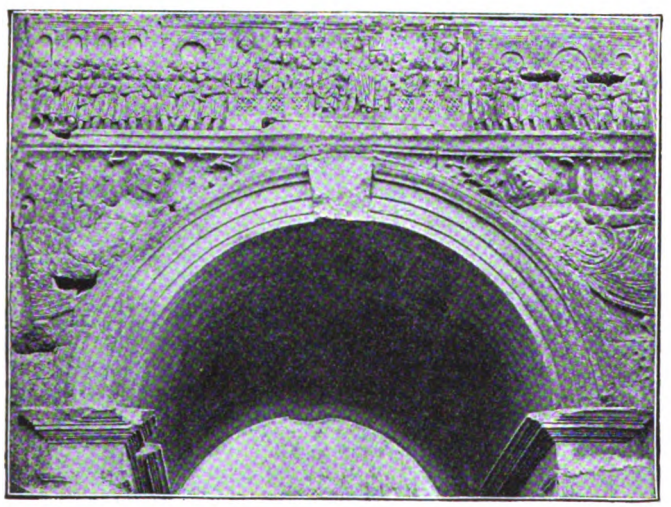

FIG. 8.—The Rostra, as represented in bas-relief, of the Arch of Constantine. The Emperor Tiberius is delivering a speech from the Rostra Vetera. On the left is the Basilica Iulia, on the right the Arch of Severus.

The example of Augustus was followed by his wealthy friends and his successors. Goths, Vandals, Saracens, Normans, mediæval and renaissance stone-cutters and lime-burners, Charles of Bourbon, modernisers from the sixteenth century onwards, merely swell the list of the destroyers of ancient Rome.

Yet there is hope. Something of what is buried under the surface will be recovered by sinking shafts, and by examining "ritual-pits" and wells. Signor Boni has recently given us an interesting list of finds in one of thirty-two wells which he has examined. Most of those which belong to the Republican period are of the fourth, third and second centuries B.C. In this well he has found a beautiful Greek marble head, pre-Pheidian, about B.C. 475, a flute, an Etruscan patera with scratched inscription, weasel skeletons (the domestic animal before the cat was introduced from Egypt), and at the bottom, seemingly, the contents of a butcher's shop, wooden-handled knives, a chestnut-wood block or cover, a whetstone, and stone weights.

(*To be continued.*)

THE EDUCATION BILL.

THE Education Bill came as a surprise. With only a day's notice it was introduced by Sir John Gorst, on May 7th, and read a first time. We print below the full text of the Bill. In many respects it is disappointing; but, as a step in the direction of establishing those desirable single local authorities for education, which nearly all educationists now regard as the only way to ensure the provision of unity and harmony in our national education, it must be welcomed on the principle that half a loaf is better than no bread. There is much diversity of opinion as to the chances of the Bill becoming an Act this Session. Many say that the congested state of public business makes such an event impossible. Others maintain that the Goverment are determined to pass the Bill this year, even if it should lead to a considerable prolongation of the Session.

Sir John Gorst's speech in introducing the Bill gave the first impression that an exhaustive and masterly treatment of the whole subject of educational administration was to be unfolded. "The Bill is to establish in every part of England and Wales a local educational authority, which it is intended shall supervise education of every kind—which it is hoped may ultimately have the control and supervision of all schools, whether elementary, secondary, or technical"—said Sir John, by way of beginning. But as the speech proceeded it became more and more clear that the Vice-President "had an eye on the future"; this consummation is not yet to be. The proposal of the Government is to make the county and borough councils, acting through statutory committees, the educational authorities of the future. It is proposed that the constitution of these committees shall be regulated by schemes, the construction of which shall be left in the hands of the councils with a view of ensuring that each scheme shall be perfectly adapted to the peculiar local needs of the area with which it is concerned. The scheme thus

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formulated is to be referred to and approved by the Board of Education, whose duty it will be to see that all interests are consulted and that all classes of people in a given area may have their views considered. When approved in this manner the scheme will become law. But the Bill provides that, though the majority of the members of the committee shall be members of the council, there must be other members, male or female, not members of the council. In the event of a county or county borough making no scheme within twelve months of the date on which the new Act comes into force, the Board of Education may make a scheme which, with the approval of Parliament, shall have the effect of a Statute.

It is thus almost impossible to conjecture the probable constitution of an average committee. The co-opted members may or may not be educational experts, probably not, in most cases. Whether acting teachers would ever be chosen time alone can prove; but it would probably be a rare thing for the ordinary country gentleman, or business man, to ask the teachers to assist in the management of what so much concerns themselves.

Such education committees are not given any rating powers by the Bill; they may simply spend the money provided by the county councils. The funds for all grades of education other than elementary are to be obtained, first, by making the local taxation money, more often called the "whiskey money," available for secondary education of every kind as well as for technical instruction as at present; and secondly, by a rate, which may not, however, exceed twopence, either upon the whole county or upon any part of it for which it may be desired to make provision. In other words, the needs of secondary education are to be met by an extra penny rate, for already the "whiskey" money and a penny rate are available for technical education and have not been found more than sufficient. Moreover, since this new penny rate is, like the other, an optional one, there is nothing to prevent counties with little enthusiasm for education leaving matters just as they are. Education committees may not maintain poor-law, reformatory, nor industrial schools, nor assist schools conducted for private profit.

The financial provisions of the Bill are inadequate. The friends of technical education will view with dismay the prospect of providing out of the present funds, *plus* a possible extra penny rate, not only technical instruction, but also whatever secondary education is considered necessary. It is not as though our present arrangements supply a satisfactory and adequate system of education for training intelligent workmen, let alone leaving a surplus fund. But, as everyone is painfully aware, the existing demands upon the national exchequer make any large imperial grant for education impossible. We cannot have a sensible and thorough system of national education without paying for it, and if there is no money available it is of little use to play at establishing something symmetrical and organic. There is more than a little of the ludicrous in the idea of having side by side school boards in charge of strictly elementary education with unlimited powers of rating, and an "education authority" responsible for technical and secondary education which may spend the money already provided for technical instruction, together with a problematical penny rate.

The difficulty which has arisen through the judgment in the Cockerton case is dealt with by section 8 of the Bill, which it is proposed shall become law as soon as the Bill is passed, and not be postponed until April 1st, 1902, like other sections. It is provided that the new education committee "*may* empower the school board to continue to carry on the work of their higher-grade and evening continuation schools, which are at present illegal, "on such terms as may be agreed upon, or in default of agreement determined by the Board of Education," and in that case, notwithstanding anything in the Elementary Education Acts, the rates may be drawn upon for these purposes. Imagining the Bill becomes law this Session, the possible condition of things which may arise is not pleasant to contemplate. The technical instruction committees, which by metamorphosis will become the new education authorities, already have schools of their own, and we foresee little likelihood of any speedy agreement being arrived at with the school boards. Verily, it would seem there is likely to be much conciliation to be effected by the Board of Education.

The manner in which the Bill avoids the difficulty of drawing the line between elementary and secondary education is ingenious, even if it is not likely to succeed. It looks as if the Government, not feeling equal to the task, were glad somehow to shift the responsibility. The school boards are to remain in charge of elementary education, but may only supply anything higher with the consent of the new authority. Presumably the created committee is to decide where elementary education finishes and higher education begins, and if the school board is dissatisfied with the decision the Board of Education acts as referee. We venture to predict that, in these circumstances, it will not be long before precisely the same school work will in one district be labelled elementary and in another secondary. This highly technical business of delimitation is not a work for county councillors. Have we not a Consultative Committee of educational experts who may know something about the matter?

But, as we have said, the Bill is a step—though a halting step—in the right direction. If a slight advance can be effected, we will cultivate a thankful spirit for small mercies. Mr. Bryce has said, if the Government will prosecute this or any other measure with a sole regard to educational efficiency, the proposals will have the perfectly fair and careful consideration of the Opposition. Sir Richard Jebb thinks the Bill will receive a cordial welcome from all interested in national education. Perhaps something may be accomplished. We are not optimistic as to the chances of the Bill becoming law this Session; we hope it may, but we can-

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not regard the proposals as more than touching the fringe of a complicated yet profoundly important subject.

A BILL TO MAKE PROVISION FOR AND CONFER CERTAIN POWERS ON LOCAL EDUCATION AUTHORITIES IN ENGLAND AND WALES.

Local Education Authorities.—1.—(1) The council of every county and county borough, acting through an education committee constituted in accordance with a scheme made by the council and approved by the Board of Education, shall be the education authority for the county or county borough.

(2) Every such scheme shall provide that a majority of the members of the committee shall be members of the council, and that there shall be other members, male or female, not members of the council.

(3) Any such scheme may, for all or any purposes of this Act, provide for a joint education committee of two or more councils, or for a separate education committee for any part of a county, and may make such provisions as appear expedient for carrying this Act into effect. In the case of a separate committee, it shall suffice that a majority of the members are members of either the county council or the council of an urban district.

(4) A scheme, when approved, shall have effect as if enacted by this Act, but may be revoked or altered by a scheme made in like manner.

(5) If a scheme has not been made for a county or county borough and approved by the Board of Education within *twelve months* after the passing of this Act, that Board may make a scheme. A scheme so made shall be laid before each House of Parliament for a period of not less than *thirty days*, and if either House before the expiration of that period presents an address to His Majesty against the scheme, or any part thereof, no further proceedings shall be taken thereon, but otherwise the scheme shall have effect as if made by a council and approved by the Board of Education.

(6) Before approving or making a scheme for the constitution of an education authority, the Board of Education shall take such measures as may appear expedient for the purpose of giving publicity to the provisions of the proposed scheme, and may, if requisite, hold a local inquiry.

(7) An education committee shall not have power to raise a rate or to borrow money.

(8) In Wales and Monmouthshire the county governing body under the Welsh Intermediate Education Act, 1889, shall be the education committee under this Act.

Application of Local Taxation Residue.—2.—The residue under section one of the Local Taxation (Customs and Excise) Act, 1890, including any balance thereof which may remain unexpended at the end of a financial year, shall be applicable for the purposes of education, and if so applied shall be administered by the education authority.

Rating Powers of Councils.—3.—(1) The council of any county or county borough may, by means of the county rate or the borough rate, as the case requires, raise sums for the purposes of this Act, and the sums so raised shall be administered by the education authority, but the amount of the rate to be levied in any one year for those purposes shall not exceed *twopence* in the pound.

(2) Any purposes for which sums raised by means of a county rate may be applied under this Act may be either general county purposes or special county purposes within the meaning of the Local Government Act, 1888, as the county council direct, and the council may determine what parishes are to be liable to contributions for any special county purposes.

Application of Money administered by Education Authority.—4.—An education authority shall apply to purposes of education all money administered by the authority under this Act, but in the application of money so administered—

(1) Shall not make a grant to, or establish or maintain,

(*a*) A public elementary day school; or

(*b*) A poor-law school, an industrial school, a day industrial school, or a reformatory school; or

(*c*) A school or college conducted for private profit; and

(2) Shall not make it a condition of a grant that any particular form of religious instruction or worship is, or is not, taught or practised in a school or college.

Provisions as to Schools established or aided by Education Authority.—5.—In a school or college receiving a grant from, or established or maintained by, an education authority,

(*a*) A day scholar shall not be required, as a condition of being admitted into or remaining in the school or college, to attend, or abstain from attending any Sunday school, place of religious worship, religious observance, or instruction in religious subjects in the school or college or elsewhere; and

(*b*) The times for religious worship or for any lesson on a religious subject shall be conveniently arranged for the purpose of allowing the withdrawal of any scholar therefrom.

Provision as to Urban Districts.—6.—(1) The council of any urban district may raise sums under this Act not exceeding in any one year a rate of *one penny* in the pound, and apply any sum so raised to purposes of education in accordance with the provisions of this Act as to money administered by an education authority, and in such manner as may be agreed on between the council and the education authority for the county in which the district is situate, or, in default of agreement, determined by the Board of Education.

(2) Where any money is raised under this section in an urban district, the education authority for the county in which the district is situate shall, on the request of the council of the urban district, delegate to that council such powers of the education authority in relation to the control and management of any school or college within the district as may be agreed upon, or, in default of agreement, be determined by the Board of Education.

(3) Any sums raised for the purposes of this section shall be paid in the case of a borough out of the borough fund or borough rate, and in the case of any other urban district out of the fund or rate applicable for the general purposes of the Public Health Acts.

(4) The council of an urban district shall, for the purposes of this section, act through an education committee constituted in like manner, and having the like powers, as the education committee of a county council, and the provisions of this Act, with respect to the constitution and powers of those committees, shall apply accordingly.

Borrowing Powers.—7.—(1) For the purposes of this Act the council of a county may borrow in like manner as for the purposes of the Local Government Act, 1888, and the council of a county borough or an urban district may borrow in like manner as for the purposes of the Public Health Acts, and the provisions of those Acts shall apply accordingly, except that the money borrowed by a borough council shall be borrowed on the security of the borough fund or borough rate.

(2) Money borrowed under this Act shall not be reckoned as part of the total debt of a county for the purposes of section sixty-nine of the Local Government Act, 1888, or as part of the debt of a county borough or urban district for the purpose of the limitation on borrowing under section two hundred and thirty-four of the Public Health Act, 1875.

Provisions for Schools under School Boards.—8.—(1) Where a school board is at the passing of this Act

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maintaining out of the school fund any school to the maintenance of which the school fund is not lawfully applicable, the education authority may empower the school board to continue to carry on the school on such terms as may be agreed upon, or in default of agreement determined by the Board of Education, and in that case the school board may, notwithstanding anything in the Elementary Education Acts, apply out of the school fund towards the maintenance of the school such sum as may be agreed on between the school board and the education authority.

(2) This section shall come into operation on the passing of this Act.

Temporary Exercise of Powers.—9.—(1) Until an education authority is constituted for a county or county borough under this Act, the council of the county or county borough may, with the sanction of the Board of Education, perform provisionally any function of an education authority, the performance of which cannot, in the opinion of the Board of Education, be postponed until the authority is constituted.

(2) This section shall come into operation on the passing of this Act.

Repeal of Enactments in Schedule.—10.—The enactments mentioned in the schedule to this Act shall be repealed to the extent specified in the third column of that schedule.

Extent, commencement, and short Title.—11.—(1) This Act shall not extend to Scotland or Ireland.

(2) This Act shall, except as otherwise provided, come into operation on the *first day of April nineteen hundred and two.*

(3) This Act may be cited as the Education Act, 1901.

SCHEDULE.

ENACTMENTS REPEALED.

Session and chapter.	Short title.	Extent of repeal.
52 & 53 Vict., c. 76	The Technical Instruction Act, 1889.	The whole Act.
53 & 54 Vict., c. 60	The Local Taxation (Customs and Excise) Act, 1890.	In section one, subsections two & three.
54 & 55 Vict., c. 4	The Technical Instruction Act, 1891.	The whole Act.

THE TEACHING OF THE MOTHER-TONGUE IN PREPARATORY SCHOOLS.[1]

THE average age at which a boy enters a preparatory school is about ten, and by that time it might reasonably be expected that he should have been taught at home or elsewhere to read correctly without having to spell words, to spell and understand the ordinary words he meets, and to write neatly. Experience seems to show, however, that this standard is reached only by the few. . . . . Preparatory schoolmasters, therefore, find themselves faced by this difficulty. If they devote a sufficient amount of time in the lower forms to these elementary subjects, it is difficult to bring boys up to the classical standard expected by public schools. On the other hand, if they take boys as they find them, and allow them to pick up what they can from the unsystematic efforts of individual masters, though the abler boys will probably get along well enough, the average and slow boy suffers all through his school life.

A study of the returns made by the schools reveals the fact that, as might be expected under the circumstances, the most remarkable differences of practice exist. The time given to all subjects included in this paper (except writing) varies from half an hour a week to twelve hours or possibly more. All schools seem to recognise the necessity of giving some time to spelling, but several give none to composition, language, or literature, and the majority give about four or five hours a week in the lower forms, and one, or at most two, in the upper. In one school a spelling lesson is learnt every day by every boy during his school course, in another half an hour a week is considered sufficient. One master gives four hours each to composition, language, and literature. Many others write that these subjects have no fixed place in their curriculum, or that they are crowded out by the necessities of public-school examinations. Truly there seems no fear that secondary schools in England are likely to suffer from the monotonous uniformity of the German system, which some writers dread. The general impression left on my own mind by a long public-school experience and the examination of the returns is that English is neglected in favour of those subjects which are showy and easily tested. And yet it seems the most ridiculous platitude to assert that until a boy can read the mother-tongue easily, can understand and assimilate what he reads, and even express his thoughts with reasonable fluency, he is not fit to start on the difficulties of Latin prose, or, indeed, the preparation of anything but the merest rote work.

The subjects will now be considered in detail.

Reading, Spelling, and Writing.

Nearly all boys can read a little when they come to school. It lies outside the scope, therefore, of this paper to consider methods of teaching beginners.

On the other hand, the minority only can read easily and understand what they read. Much time, therefore—not less than six hours a week—ought to be devoted to reading in the lower forms, and necessarily, therefore, to reading aloud. These lessons can be made most interesting and instructive if a suitable reading book is chosen. For a good teacher can here show his very best powers. By bright oral questioning he can not only be teaching vocabulary (a most important point), spelling, and easy grammar, but he can also be training his boys to grasp the real meaning of every passage they read.

In their use of these lessons, the Germans are far in advance of us. They ask many more questions on the subject-matter of a passage than is usual in our forms. They demand grammatical and well-expressed answers, and so prepare the way for the teaching of composition. The mistake made, in my opinion, by most English teachers is to require only answers in one word or short phrases. They are so anxious to be smart, and bright, and vigorous, that the interchange of question and answer is like the rattle of musketry fire. No doubt it demands more skill and preparation on the part of the teacher to keep a class interested in the slower and more elaborate answers required by the German teacher. It is true also that it is quite possible to err on the other side, and to waste time and cover too little ground.

The English reading lesson, therefore, should be to the little boy at a preparatory school his most important task. It may be combined with history or geography teaching, but its main purpose should always be to train him to read, think, and express his thoughts in his own language. He should also, surely, be taught to manage his voice so that it may express the meaning he wishes to convey. Very diverse opinions are held as to the desirability or possibility of training boys in elocution, but, whatever view be taken, it must be right to let them hear the difference between good and bad reading, and detect some of the principles which underlie that difference. How pleased a

[1] Abridged from a paper by Mr. H. C. Tillard, Headmaster of the Preparatory School at Cargilfield, Cramond Bridge, Midlothian, in "Special Reports on Educational Subjects," vol. vi.

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boy is, for example, when he first discovers that if he holds up his voice he implies that there is more to come, if he drops it that he has finished his sentence.

Spelling is, as a rule, not neglected at preparatory schools, though here again there is little agreement among teachers as to methods. In some schools lists of words are learnt every night, in others the use of a spelling book is condemned. One headmaster writes that dictation is hopelessly unscientific, others that dictation lessons are given in all forms in their schools. But, thanks to Government examinations, there is a consensus of opinion that in one way or another spelling should be taught. The practice which seems to me most reasonable is to make boys (*a*) copy out correctly all words wrongly spelt; (*b*) learn words from a spelling book, looking out the meanings in a dictionary when necessary, and framing sentences to illustrate their use; (*c*) collect a few leading rules; (*d*) look out for derivations. I am inclined to agree in the condemnation of dictation. For the good speller it is waste of time, for the bad it is a confirmation, for the time at least, in error.

Writing is well taught, as a rule. The prevailing style is the upright. It has the merit of legibility if not of beauty. There is, perhaps, a tendency to crush out individualism in the endeavour to secure uniform excellence. It is possible to stretch the desire for neatness too far. I have known much time wasted by teachers whose pride was that their boys' exercise books should be spotlessly tidy. Two further points occur to me as the result of my own experience. Copies are of little use in the case of confirmed bad writers. It is better to try and effect an improvement on the lines of a boy's own hand. Secondly, bad writing is often caused by misuse of the top joint of the first finger. The curve should be convex above, concave below. Otherwise, pressure is thrown on the ball instead of the tip of the finger, and control over the pen is lost.

Original Composition and Reproduction.

This subject is rarely satisfactorily taught in English schools, and often entirely neglected. The weekly theme, marked frequently "by impression," is a poor substitute for the admirable methods of the German schools. The fact is there is no more wearisome task imposed on the teacher than the conscientious correction of ungrammatical and unidiomatic English. Nor is such correction, however careful, of much value unless some minutes are given to each boy individually. In few English schools is more attempted than this, and in a very large number, judging from the returns, the subject does not form part of the curriculum. In Germany, from the very first, composition is systematically taught. Beginning with oral lessons in reproduction from the reading-book, the pupil is gradually led on to clothe in his own language ideas supplied to him by the teacher, and only in the higher classes is he expected to find his own material. Fluency in speech is considered to be an essential preliminary to fluency in writing. When a child can readily answer in well-chosen language, he is then, and then only, allowed to commit his words to writing. The result of this training is that in vocabulary and power of expression the average German schoolboy far outdistances the English. On the other hand, it is possible that such a system may, if pushed too far, render a boy over-dependent upon outside help and weaken his originality; but the true mean can surely be found.

A practice which I observe several teachers recommend in their returns, and which personally I have found of considerable service, is to set frequent papers on subjects like history, the answers to which are criticised and marked as composition. In this way, without excessive expenditure of time, at least on the part of the boy, a good deal of composition may be taught. I feel sure that in history and geography lessons with little boys too much attention is generally given to the acquisition of facts. Little papers are constantly set to test industry, and in this way (to repeat what I said before) the memory which is naturally strong is assiduously trained, and the powers of reflection and expression which are weak are comparatively neglected.

Language (Grammar, Word-Formation, &c.).

Elementary grammar and analysis are taught in most schools, but mainly, as I gather, with a view to Latin prose and construing; that is to say, boys learn to pick out the parts of speech, the subject and predicate, the principal and dependent sentences, and not much more. I fancy few schools use a text-book, and certainly only a small amount of time (about an hour a week on the average) is given to the subject. I am inclined to think that in this respect we are right. It is easy, as I have seen, to spend many precious hours on the elaborate writing out of analyses of complicated sentences without corresponding profit, and fluency in speech and writing, which are the main objects in view, are retarded rather than aided by reference to rule. At the same time, it is obviously necessary that the elements should be thoroughly mastered. I believe many boys go through their school life without a real grasp of the difference between an adverb, conjunction, and preposition.

With regard to word-formation and the history of the language, it can only be said that they are rarely taught at all. An individual master may have a taste fo etymology, and encourage his boys to look for derivations, but so far as I am aware, systematic teaching of the subject is almost unknown. Yet taken as an alternative to literature for a term's reading the subject is most stimulating. It widens a boy's vocabulary, and makes him more accurate in his choice of words, and may further lay the foundations of a life-long interest.

Literature.

The returns here speak for themselves. "No time," "crowded out," "not taught." These phrases occur again and again. A few schools teach the subject systematically, but, generally speaking, it is neglected.

I should like to consider whether it is desirable to teach literature at all, and, if it is so, whether the subject is important enough to override the plea of "no time." Is it desirable to teach literature at all? There is by no means universal agreement on this point.

It is often said that by bringing literature into the class-room you take away half its charm; that holiday tasks and term extras have killed the love of the Waverley Novels, and that Shakespeare and Tennyson will suffer the same fate if they come under the same blighting influences; that the boy regards as a task what he would else value one day as treasure trove; the master if enthusiastic finds that he is casting his pearls before swine. I believe this point of view to be quite wrong. If boys care less than they did for the Waverleys (and I am not certain that this is the case), it is because more highly-seasoned dishes are offered them. If an English lesson implies learning of notes and analysis of sentences it will probably be considered as only a trifle preferable to the same task in a foreign language. If a man expects young boys to care for his pet passages of Keats or Wordsworth he will probably be disappointed. To make a literature lesson attractive and valuable, three conditions are essential: the book must be suitable, the aim purely literary, and the teacher really keen.

The book must be suitable. Boys like narrative poetry and little else. The small boys of ten or eleven prefer their stories short. For them Macaulay's Lays, Aytoun's Lays, modern ballads, such as Scott's and Campbell's, with a few of Tennyson's and Browning's, will afford an ample choice. There are, moreover, plenty of suitable collections from which to select.

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As they get older, the longer poems of Scott, "The Lay" and "Marmion" especially, can be read. Personally, I have found nothing better than some of the "Idylls of the King," Geraint and Enid, Gareth and Lynette, and the Coming and Passing of Arthur. Some of the stories from "The Earthly Paradise" may be taken as a change. If a man has a taste for the old ballads they can undoubtedly be made interesting to boys, but the vocabulary is a difficulty, and there is not much teaching matter to be found in them. The "Golden Treasury" collection of ballads is, I think, the best, though that in "The Chandos Classics" is more complete. Lastly, for boys of fourteen or so, an occasional play of Shakespeare is a great treat.

I have not included any prose works, because I have never been able to find any that are really suitable, except perhaps Lamb's "Tales" and Kingsley's "Heroes." It is possible that something might be made of Stevenson.

The aim must be literary. If you wish to teach your boys vocabulary, grammar, language, take a "reader," or the history or geography in ordinary use—anything rather than the poetry you want to make them care for. Here the first object is to create a taste, not to teach a language. Inadvertently they will, of necessity, widen their vocabulary and acquire grammatical knowledge; but these are, so to speak, bye-products. The words must be explained, the construction elucidated, but only with the ulterior object of making boys feel what the poet desires them to feel. And so, if I were teaching the "Lay of the Last Minstrel," I should care little if my boys forgot what an aventayle or heriot was, or did not understand the allusion in "the warbling Doric reed," if only they had felt the glamour of the midnight tryst at Melrose, or the pathos of the minstrel's prayer—

By Yarrow's stream still let me stray!

Such is the first and most important end in view, but there is another. Not only has the aim of the poet to be revealed, but also the means by which he accomplishes it. With many boys the sense of rhythm is dormant and has to be awakened; they hardly appreciate what rhyme is, much less metre. Again, the tricks of the trade, such as alliteration and onomatopœia, are to them a delightful new study. Similes, metaphors, epithets may all be collected and examined. With a writer like Tennyson, one has an inexhaustible store on which to stand; and I know nothing which an intelligent boy enjoys more than his first glimpses into the workshop of the poet. I need hardly add that he should be encouraged to learn by heart, to compare, and quote, for no teacher is likely to omit these points.

In conclusion, I should like to point out that, judging from the experience of the past, one may infer that the preparatory schools will not seriously move in the desired direction unless the public schools take the lead, and after setting their own houses in order, require from boys who come up for entrance or scholarship examinations some knowledge of their mother-tongue and some power of expressing their thoughts.

SUCH a course of study [in Literature] begun at school cannot fail to touch the springs of character and affect the emotions and the imagination. It may not brace the logical powers or store the mind with useful information; but education has many functions, and the discipline of the taste, the appreciation of perfect language, the contact with the greatest interpreters of human feeling and aspiration, is no mean part of a liberal education, and will furnish in after years one of the best antidotes to the *ennui* of idleness, the mechanism of routine, and the exhaustion of overwork.—E. W. Howson.

CURRENT GEOGRAPHICAL TOPICS.

By A. J. HERBERTSON, Ph.D., F.R.G.S.

The Geography of South Africa.

IN October, November and December, 1899, THE SCHOOL WORLD contained articles on the "Transvaal," "Natal," and the "Political Geography of South Africa." Several readers have asked for additional notes on the geography of South Africa.

First as to maps. The Diagram Company's penny contour maps, or their "South African Atlas,"[1] or the "Atlas for South African Schools," published by Messrs. Nelson, also issued at one time as the "Transvaal War Atlas" (1s.), ought to be studied. Bartholomew's "Reduced Survey Map of South Africa," contoured and with hill-shading, is an excellent physical map on which other contour maps are largely based. It serves as a wall map for small classes, if the rivers and coasts are slightly thickened with Indian ink. The Diagram Company's maps may be obtained as lantern slides.[2]

Next as to books. Bryce's "Impressions of South Africa" gives the best general account of the broad features of the country, combined with graphic descriptions of localities visited by the author.

The latest edition of the "Union Castle Guide to South Africa," by the Messrs. Brown (Sampson Low, 2s. 6d.), is invaluable, and contains much information difficult to find elsewhere.

Among school books, Heawood's "Geography of Africa" (Macmillan, 2s. 6d.) is the best, dealing with the whole continent, and Dawson & Sutherland's "Geography of the British Colonies" (Macmillan, 2s.) is also excellent for British History.

Lyde's "Africa" (Black's) saves the teacher dictating class notes.

The penny pamphlets on Cape Colony and Natal, of the Emigrants' Information Office, are worth purchasing, and the official handbooks of Cape Colony (Noble) and Natal (Ingram) may be referred to.

Lucas's "Historical Geography of the British Colonies—vol. iv., South and East Africa"—and Keane's Account of South Africa in "Stanford's Compendium of Geography," Africa, vol. ii., are useful works to consult. The teacher is always well-advised to turn to Elisée Reclus' "Universal Geography" when preparing a lesson. It is by far the most interesting and human of our geographies. Recently the South African chapters have been brought up to date by Professor Reclus' brother, Onésime, and this work in French is the latest trustworthy book on the country.

Note the position of South Africa, roughly between 35° and 15° S. Compare with Mexico, Arabia, China south of the Hwang-ho, but especially with Australia. Note that South Africa is shorter and narrower than Australia. Compare the distances from Cape Town to the chief ports and points in the interior with similar distances from London. (See Brown's "Guide to South Africa" for distances from Cape Town.)

The physical features must be thoroughly understood. The narrow coastal plain, the succession of terraces, broadest in the south, the great undulating plateau. The highest regions lie in the extreme south-east, where the great rivers rise. Montaux Sources is well-named, for near it the Tugela, Orange, Caledon, and a tributary of the Vaal rise. The west coast is almost without a stream, but there are valleys where water flows after rain.

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[1] May be bought from Messrs. G. Philip & Son, 32, Fleet Street, E.C.

[2] Members of the Geographical Association can have these maps and a number of view slides for 2d. per slide per term. Apply to the Diagram Company, 27, Victoria Street, Clapham, S.W.

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The east coast has many streams. Compare the distribution of constant and intermittent rivers with the rainfall map.

If possible, obtain illustrations of Table mountain, the Tugela falls, or other parts of the Drakensberg escarpment, a river drift or ford, some of the volcanic regions, and a scene in desert region with no flowing water. Compare views of the kopjes of the drier regions with those of Natal, where water erosion is much more active. Notice the more rounded character of the latter, and the less scanty vegetation. All the places depicted should be located on the orographical and rainfall maps.

On the temperature maps compare the value and general trend of the isotherms of summer and winter with either those of spring and autumn, or else of the mean of the year. Contrast the temperature on the east and west coasts. Note how rapidly the summer temperature increases from Port Nolloth to Springbokfontein, in spite of the great differences of height. This shallow narrow strip of colder air is due to up-welling of cold water on the west coast.

Notice how the southern mountain ranges prevent the rains reaching the karroos. The rains of the Cape peninsula are brought with the north-west winds of winter, and as the Cape is in the southern hemisphere, this is comparable with our own south-westerly rainy winds.

The distribution of rainfall is a key to that of vegetation, and must be thoroughly known. In addition to the annual rainfall map, from which the limits of desert, grass, and woodlands may be inferred, the summer and winter maps (say January and July) must be examined, or else a map such as that given in Bartholomew's "Atlas of Meteorology," which traces the limits of summer and winter rains. These maps indicate different characters of vegetation. The south-west, with winter rains, has a Mediterranean type of vegetation ; the south-east, with summer rains, more a Chinese type. The hill-sides and river valleys of the east and of the south, where rain is more uniformly distributed throughout the year, have some forests.

The distributions of rain and of vegetation in South Africa may be compared with those of Australia, those of the south-west region with those of Central Chile, southern California and Marocco, those of the south-east region with those of Argentina, or east central China.

The limits of agriculture and stock-farming may be traced on the rainfall map; and the different agricultural values of the east and west of the Orange River Colony and of the Transvaal may be deduced.

Note the fisheries over the shallow Agulhas bank, whose position form is shown on the contoured map.

Notice where the gold and coal mines are, and how the chief railway routes have been built to communicate with them. Compare the towns on a map about thirty years old with a modern one. Compare also the statistics of exports of thirty years ago with those for 1897 or 1898, and note how diamonds and gold represent the chief increase in value. Point out, however, that prices have fallen, and that the present value represents larger quantities.

The political boundaries were discussed in the School World for December, 1899. For the latest details consult the "Statesman's Year Book" for 1901, which has just been issued.

All the books mentioned in this article should be in the local Free Library.

I take it that the whole object of education is, in the first place, to train the faculties of the young in such a manner as to give their possessors the best chance of being happy and useful in their generation; and, in the second place, to furnish them with the most important portions of that immense capitalised experience of the human race which we call knowledge of various kinds.—Huxley.

ITEMS OF INTEREST.

GENERAL.

It was not expected that the Education Bill would be brought in for its second reading before Whitsuntide. Educationists have been busy enough, however, discussing its provisions. Several deputations have waited upon the Duke of Devonshire to bring into prominence their particular views upon many of the considerations raised. The first deputation was from the Secondary and Technical Defence Committee, to urge the importance of preventing the overlapping by school boards into the realm of secondary and technical education; but as this deputation had been arranged some time before the introduction of the Education Bill, the speeches seemed framed without any reference to the Bill's proposals for dealing with the illegal work of school boards. A second united deputation, some days later, from the Association of School Boards, the Parliamentary Committee of the Trades Congress, and the Headmasters of higher-grade schools, pleaded the unsatisfactoriness of Clause 8 of the Bill, which is designed to place higher-grade schools and evening continuation schools under the proposed new local committees, and to ask for the introduction of a short enabling Bill. The deputation had to rest content with an assurance that the Bill was framed in no hostile spirit, but with a desire to utilise the schools represented by them. Another deputation representing the Incorporated Association of Headmasters, at which Dr. Gow, the Headmaster-elect of Westminster, was the principal spokesman, urged the expediency of passing the Bill this Session, and by means of a statistical statement showed, so far as London is concerned, that a secondary-school system cannot be properly developed without a paramount local authority with a single educational budget.

The Military Instruction (Schools and Cadets) Bill has been read a second time in the House of Lords. In the main the Bill was drawn up by the Headmaster of Eton and the Headmaster of the Grocers' Company's School. It provides that the youth of the country, not being physically unfit, shall undergo a course of drill as a part of their education with a view to their healthy development, and that at a later age they shall receive the rudiments of military training, so as to fit them for taking their place in the national defence. The Bill has, it is true, received the approval of the Headmasters' Conference and the I.A.H.M.; but, since the Under-Secretary for War calculates that to carry out the proposals of the Bill would cost close on £2,000,000 a year, there seems little likelihood of its being advanced another stage. The Government undertake no responsibility as to its further stages, but the Bill is to be submitted for careful examination by the responsible departments.

The London School Board have informed the Board of Education of their decision not to take the Cockerton case to the House of Lords, and have written urging the Board of Education to take steps during the current session by suitable legislation to secure school boards the right to maintain both their day and evening schools, out of the rates if necessary, in accordance with the Code in force at present. Unless they are given new powers in the meantime, the London School Board will open no science and art classes next September, nor will they admit adults to their evening continuation classes next winter. It is consequently evident that, in the absence of legislation this session, a serious state of things may exist in London and the large provincial towns. The work of higher-grade and evening continuation schools must not be discontinued, and we hope the Government will see to it that in some

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way such important branches of our national education are duly legalised.

THE principal alterations in the "Directory" of the Board of Education, South Kensington, for the forthcoming session, 1901-1902, relate, we learn from a special circular which has been issued, (*a*) to the formation of evening classes for providing instruction in groups of subjects in science and art, and (*b*) to the formulation in day secondary schools of schemes of instruction for a three or four years' course in science. Evening schools and classes may submit for the approval of the Board of Education schemes and time-tables for grouping together cognate science and art subjects. This grouping will only be permitted where the students are actually in training for a trade or craft under some recognised educational authority, and where the subjects selected for grouping are those necessary for the instruction in the principles underlying such trade or craft. Students must be registered for either elementary or advanced instruction in the group. Grants are to be paid on attendances and differ in the elementary and advanced courses.

A SECONDARY day-school may submit a scheme of instruction for a three or four years' course in science for forms in which the average age of the students is above twelve, which are reported by the Inspector as able to benefit by such teaching, provided that the number of such qualified students is not less than twenty. The time-table of the whole curriculum of the school must be submitted to the Board of Education showing that it makes provision for not less than nine hours per week of science instruction, including not more than five hours' teaching in mathematics. The science teaching must be both theoretical and practical, and the laboratories must be suitably equipped for the subjects sanctioned. The commencement of any school term may be recognised as the commencement of the school year. Every student must attend all the yearly courses in the prescribed order, except that a student whose previous instruction is equivalent to that given in the course laid down for one or more years may, with the approval of the Inspector, be placed in the year's course above that to which he is held to have attained. The grants are to be assessed on the number of attendances and the number of students.

THE second edition of the full programme of the tenth Summer Meeting of University Extension Students to be held this year at Oxford has now been published. There will be several conferences during the meeting, two of which will be on social economic subjects, and a third, in some respects the most important, will be concerned with the "educational ladder." Very naturally, considerable attention is to be given to the discussion as to the place that University extension should take in any scheme of national education. Papers are promised which will attempt to show what the relations should be between primary and secondary education on the one hand, and between secondary and university education on the other. The other conferences are to consider the questions of "The Old Age Problem" and "The Housing Question." Mr. C. S. Loch, the Secretary to the Charity Organisation Society, will preside at the former of these, and Mr. E. Bond at the latter.

THE Right Hon. H. H. Asquith has accepted the invitation of the Delegates to deliver the inaugural address. The lectures are arranged in seven main sections—History, Literature, Science, Social Economics, Education, Fine Art and Architecture, and one describing the libraries and museums of Oxford. As would be expected, the History section gives a prominent place to the times and life of King Alfred. The history of epic literature will engage the attention of the Literature section. Science students are specially invited to study the recent advances in astronomy and geography. The arrangements in the section of Social Economics are far from complete, but already an enticing bill of intellectual fare is offered. In addition to the ten lectures in Architecture there will be numerous excursions affording an opportunity of practical work under the guidance of experts. The education lectures are not yet finally arranged, but we notice that Messrs. Sadler, Yoxall, and Childs have undertaken to give addresses. Nor is the recreative side of the meeting less well looked after. It is not to be all work. We notice the following special headings among others—Boating, Swimming, Bathing, Cycling, &c. The meeting promises to be a great success.

AT University College, London, the free public lectures on "Roman Britain" will be continued on the Thursdays of June at four o'clock. In these lectures Mr. F. Haverfield will deal with the military occupation, the civilisation of non-military districts, and the sequel in post-Roman England. Prof. Priebsch's lectures on the "Minnesang and Meistergesang" will be continued on the first two Fridays of June.

PROF. BERNARD BOUVIER has sent us fuller particulars of the Holiday French Course at the University of Geneva, which was mentioned in our list last month. Though, as has been stated already, the course begins on July 16th, teachers from this country who are not free until the beginning of August may join the classes on their arrival and attend until the end of the month. Lectures will be delivered by Professor Bernard, who is in general charge of the course, and also by Professors Wuarin, Bally, Zbinden, Thudichum, Mercier, Dufour, and Baud-Bovy. Conversation circles will be arranged, and also a singing class. Saturday will be given up to excursions organised by the University.

THE Committee of the Irish Literary Society, London, through the generosity of Sir Thomas Lipton, offer for competition two prizes, one of £50 for the best essay, written in English, on the "Early Institutions of Ireland," and the other of £50 for the best essay, written in Irish, on "Brian Boru." Copies of the conditions may be obtained from the Secretary of the Irish Literary Society, 8, Adelphi Terrace, London, W.C. Essays are to be sent in before March 1st, 1902. Lord Justice Henn Collins and Professor York Powell have consented to act as judges of the English essay, and the Rev. Peter O'Leary and Mr. John MacNeill of the essay in Irish.

WE have received from the Comité de Patronage of the Holiday French Courses at the University of Grenoble, which were mentioned in our list published last month, detailed syllabuses of the lectures to be delivered at the numerous courses arranged to take place between July 2nd and October 31st. Intending visitors may rely upon a very large choice of subjects. Different professors of the University have undertaken the duties of Director of Studies for a month each. Thus, during August, when English teachers are most likely to be free, M. Besson will be in charge of the work, and will himself guide students in their practical exercises in translation from an English text, as well as lecture on phonetics; he will have the assistance of nine other lecturers. The illustrated Guide, which also has reached us, to Le Dauphiné, of which Grenoble was formerly the capital, shows that the country over which the student may roam at his leisure is both charming and varied. Since the population of Grenoble is 65,000, the student will have an opportunity of seeing many aspects of French life.

ONE of the most recent of the educational articles in the reviews is that of Mr. Cloudesley Brereton in the May *Fortnightly*, entitled "A National System of Education." It ably urges the need of a "system in which nothing will be crushed

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out and everything have a chance of development, or, in other words, some sort of organisation in which there shall be a place for every type of education, and every type shall be in its place." It is urged that the school boards cannot be the single local authority for education; that a brand new body is neither desirable nor possible; that, in fact, the County Council will best perform the duties of the new authority. But, as the work to be done is so extensive, the County Council would have necessarily to delegate large powers to any important non-county borough within its area. These propositions naturally supply Mr. Brereton with ample material for explaining what must be done to supplement the unrelated attempts which already have been made to educate the nation, and to point out the advantages attached to the adoption of the County Council as the paramount educational authority. The article is an important contribution to the discussion of a most pressing difficulty.

THERE are still many teachers of French and German who, though recognising the value of foreign correspondence for their pupils, do not know how to benefit by the system of International Correspondence which has been organised by Mr. W. T. Stead in this country, M. Mieille in France, Prof. Hartmann in Germany, and others. From the letters received by us from time to time asking for information upon the system, we are led to believe that *Comrades All*, the organ of the Association, will be of service to many teachers of modern languages. This interesting annual, printed in English, German and French, contains full, clear rules for the management of scholars' correspondence; and teachers who think of trying this excellent way of developing an interest in the study of French and German should procure a copy. The annual costs a shilling, and is published in London at the office of the *Review of Reviews*. We shall be glad to assist teachers to obtain the names and addresses of suitable French or German correspondents for their pupils.

A NICELY bound set of specimen pages from the ninth edition of the "Encyclopædia Britannica," which has been sent to us, contains fragments extracted from a few among the 16,000 articles contained in the twenty-four volumes of 850 pages each, which, with the twenty-fifth volume containing a very full index, make up the work. The *Daily Mail* will send the complete set of twenty-five volumes, bound in cloth, for a first payment of five shillings and thirty additional monthly payments of twelve shillings. The books can be obtained in better bindings for slightly larger monthly sums. The teacher in possession of a work such as this will always be able to clear up a disputed point on any subject.

WE have received notice of the forthcoming publication of a little book which professes to be a new departure in historical manuals. It is called—to quote only a part of a somewhat cumbrous title—"Problems and Exercises in English History, 1399-1603," and the names of both author and publisher—J. S. Lindsey and Messrs. Heffer, of Cambridge respectively—are new to us. The book is intended to show how (in the author's opinion) questions in history ought to be answered; and it seems to be primarily designed, though somewhat belated in appearance, to help Oxford Local candidates this summer.

JUDGING from the forty-first report of the Technical Education Committee of the Surrey County Council, it is possible, even now, to conduct evening continuation schools legally in districts where the County Council desires them, and where sufficient funds are available for the purpose. Out of twenty-eight school boards in Surrey twelve only conduct continuation schools, yet in this county evening continuation schools advance in strength and numbers. There are at present, the report says, forty continuation schools for boys, twenty-eight mixed, and ten girls' schools. It seems, moreover, that £50 is the total real school-board rate-charge for evening continuation schools in Surrey, and since this is spent on scholars under sixteen, it is legal. A circular has been issued to the school boards of the county stating that where they are making an expenditure on scholars over sixteen for teaching technical subjects, with the approval of the Technical Instruction Committee, arrangements will, on the request of the proper authority, be made to raise the necessary sum by a technical instruction rate over the area concerned, so that it may not be charged to the school-board rate.

LOCAL enthusiasm for education is certainly on the increase. Southport, a town remarkable for the number of its private schools, has appointed a committee, consisting of town councillors and co-opted members, to enquire into the present provisions for secondary education in the town, to report thereon, and to make such recommendations as may appear necessary to ensure an adequate supply of the various grades of education. The Science and Art Institute, the University Extension Society, the Free Library, and many of the schools are represented on the committee, which is empowered to formulate a scheme, to be presented to the Town Council, for bringing the entire secondary education of the borough under one authority.

TEACHERS of history would do well to provide themselves with a copy of the Memorandum on the Teaching of History in Schools, prepared by Prof. Withers for the London School Board. After dealing with the amount of time which may be given advantageously to the subject and reviewing the results of foreign experience, Prof. Withers formulates what he considers to be the main purposes of history teaching in elementary schools. Among other results, such study of history should furnish pictures of human life connected with tales of human experience and types of human conduct in the chief epochs and among the chief races of mankind, and thus provide ideas to suggest and nourish feelings of human sympathy and admiration, which are of the greatest importance in forming the will and character of the child. History, too, should give some idea of the long and difficult process by which human civilisation has come to be what it is, and of the debt under which we lie to the great men of all nations. We agree with Prof. Withers that the study of history demands an honoured place on the time-table of a primary school, and would add the hope that its claims may not be swamped by the utilitarian demands of a nation of shopkeepers.

"HOW useful it would prove to every community if a simple and concise history could be kept in the district school, containing a record of the chief events of the neighbourhood, the rescuing from oblivion of the most important scenes and incidents in its early settlement, and a brief record of the trials and successes of those pupils who have gone out from the school in the past." This is a suggestion of the *Educational Review* of New Brunswick, Canada, which should prove helpful to distressed editors of school magazines. Disregarding the sentence about "early settlement," there is here a means of rendering the school magazine more interesting and useful at the same time. In such publications it is already customary to supply a full account of the successes of past and present pupils, but it is rarely that any notice is taken of the current history of the neighbourhood. We cordially recommend enterprising editors to try the plan of chronicling such local events as are worthy of the honour, for successful efforts will certainly be of value to future historians.

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THE annual combined competitive examination conducted by the Civil Service Commissioners for the purpose of selecting candidates for the higher division of the Home Civil Service, the Indian Civil Service and the Civil Services of Ceylon, Hong Kong, the Straits Settlements and the Protected States of the Malay Peninsula, is announced to begin in the current year on August 1st, in London. Intending competitors must send their entry forms to the Secretary, Civil Service Commission, S.W., on or before July 1st. The limits of age for the several services are:—Home Civil Service (Class I.), 22—24 on August 1st, 1901; Indian Civil Service, 21—23 on January 1st, 1901; and Eastern Cadets, 21—24 on August 1st, 1901. Provided a candidate satisfies each of the age limits he may enter his name for all three of the services, but after the announcement of the result of the examination he must declare on which list he prefers his name to remain. The list of subjects it is possible to offer is too long for publication. No subject is obligatory. The examination is essentially one for the specialist. The number of candidates to be selected for the Indian Civil Service is forty-seven, and at present there are thirteen vacancies for Eastern Cadetships, but this number may be increased by the date of the examination. No vacancies in the Home Civil Service are at present announced, but those vacancies are offered to duly qualified candidates which may occur before or within six months after the announcement of the result of the examination.

AN open competitive examination for at least three Junior Appointments in the Supply and Accounting Departments of the Admiralty will be held in London, Edinburgh and Dublin, commencing on June 25th, 1901. The limits of age are 18 and 20. The Examination will be in the following subjects, viz.:—*Class I.*—Mathematics I. (elementary, including arithmetic); Latin; French or German; English composition; and geography. *Class II.*—Mathematics II. (advanced); German or French; Greek; English history; chemistry and heat; physics; and physiography and geology. All the subjects of Class I. may be taken up. Only two of the subjects of Class II. may be taken up, and if one of these subjects be a modern language, it must be different from the modern language selected in Class I. From the syllabus it would appear that the standard of the papers in these subjects is not higher than that of those set in the Senior Local Examinations. The entry forms must be received at the office of the Civil Service Commission, S.W., on or before June 6th, 1901. Successful candidates are appointed to the Admiralty service on the express understanding that they are liable to serve, as required, either at the Admiralty or at any of his Majesty's naval establishments at home or abroad. Successful candidates must satisfy the Medical Director-General of the Navy as to their physical fitness for service abroad.

THE progress of our Inter-School Chess Correspondence Tourney will be seen from the subjoined table:—

	Bishop's Stortford	Saffron Walden	Harrogate	Birmingham
N.G.S., Bishop's Stortford	— ...	2 ...	1 ...	1
Friends' School, Saffron Walden	0 ...	— ...	...	
New College, Harrogate	...	...	— ...	
K.E.H.S., Birmingham	1 ...	...	...	—

IN Prof. H. E. Armstrong's letter, published last month, the following corrections should be made:—p. 195, lines 17 and 45, col. 2, for "Euchiridion" read *Enchiridion*; line 62, for "enthusiastic" read *enthusiasts*; p. 196, line 1, for "*jein*" read *sein*.

SCOTTISH.

THE Merit Certificate, which is both the Leaving Certificate of the elementary schools and also the passport into the higher-grade schools and advanced departments, is at present coming in for much adverse criticism. The extreme variations in the methods of examination and in the standard demanded for a pass in different districts have thrown unmerited discredit on the whole certificate. The principle of the Merit Certificate, as laid down by Sir Henry Craik, is entirely admirable, and if wisely interpreted, should do for the elementary schools what the Leaving Certificates have done for the secondary. But it is essential that the principle of central control followed in the latter examinations should be extended to the former, and no room left as at present for the individual inspector to fix the method and standard necessary. The personal equation of the examiner can alone account for the percentage of passes for the Merit Certificate varying from 41 per cent. in one district to 94 per cent. in another.

THE Association of Higher-Grade Teachers at a recent meeting passed the following resolutions in regard to the Merit Certificate, and these may be taken as typical of the findings of other educational bodies on this subject:—(1) That throughout Scotland the standard for the Merit Certificate still varies unduly, both as to the methods followed in conducting the examination and as to the nature of the tests applied. (2) That the Merit Certificate be not demanded as a test for entrance to advanced departments and higher-grade schools. Because, while highly desirable as a test of the qualifications of pupils about to leave school, it is, for the following reasons, unsatisfactory as a condition of entrance to higher-grade schools and advanced departments:—(*a*) Requiring no knowledge of foreign languages or of science, it is unsuitable as a test of fitness for studying higher subjects; (*b*) In all schools the preparation for it necessarily hampers the required preliminary training in higher subjects of pupils desirous and capable of pursuing those subjects in advanced departments and higher-grade schools; (*c*) If the study of the higher subjects is delayed till after the Merit Certificate stage, these subjects cannot be fully mastered in the average remaining period of school life.

THE new Code for continuation classes, just issued by the Scotch Education Department, may very well be regarded as a revolution of previous Codes rather than a reform of them. It is Lord Balfour's and Sir Henry Craik's "crowning mercy" to Scottish education, as it is without a shadow of doubt the ablest and most original of their many essays in this field. The essential object of the Code is to provide such special instruction as pupils who have ceased regular instruction at school are impelled to seek by experience of the requirements of life and of their own particular occupation. For this purpose the subjects chosen by the pupils should be homogeneous in character, and should have a definite aim relative to the pupil's object in life, and instruction should only be given by those who possess special knowledge, both theoretical and practical, of the subjects which they undertake.

BY the new Code, *the Evening* Continuation School becomes a thing of the past, for the classes may be held at any time of the day, morning or evening, and instruction may be given either in single subjects or in groups of subjects. There is no restriction of age, and no restriction of subjects, practical or theoretical. Former Codes had the vicious provision that the more attendances that were made, after a fixed minimum, the less grant was obtained. The new Code very wisely provides an enhanced grant for prolonged attendances, while the first *ten* attendances are not to be reckoned at all for grant-earning purposes. The

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large grants given for attendances beyond ten amply make up for this disqualification. The principle of taking no account of a few attendances by pupils, whose effort is not sustained to a point at which the instruction given begins to be really effective, is thoroughly sound from an educational standpoint. English educationists, in view of the Cockerton judgment, may well look with envy upon the liberal and unrestricted terms of this Code.

IN view of the outstanding position held by Scotland in education, visitors to the International Exhibition at Glasgow will be greatly disappointed at the extent and nature of the space allotted to the educational exhibits. These are housed in a small room at the top of the Fine Art Gallery, and may very well be undiscovered by all save the most earnest seekers. So limited is the space that foreign exhibits are entirely excluded, while England and Ireland are but meagrely represented. Even some Scottish schools, whose exhibits obtained the highest awards at Paris, have had to be excluded. The Education Committee have made the utmost use of every inch of space at their disposal, and the exhibits they have brought together are well worthy of better accommodation. They present a complete and systematic view of the present position as regards school buildings and school equipment, and the method, character and extent of school work. The unique feature in the exhibits is that they disclose in a readily interpretable form, even to the uninitiated, the main features of school life, its objects, and the results attained.

WELSH.

THE Welsh Language Society has put forward a scheme for the teaching of Welsh. It urges that in the Welsh-speaking districts the infants' classes should be taught mainly in Welsh. Lessons must, of course, be oral only, and the teaching of English almost entirely by the direct method. Welsh reading should precede English reading. For early teaching a Welsh reading-book is to be prefered to one which is bi-lingual. Welsh should be the medium of instruction in the moral and religious lessons, lessons in common things, and in history and geography. At the same time there should be systematic teaching of Welsh, including reading, composition and the facts of the language. In English-speaking districts where Welsh is taught it should be taught as a second language by the direct method. An adequate amount of time must be given to it, but Welsh reading should not be begun till there is some degree of mastery in English reading. In bi-lingual districts the Society urges that children should have every opportunity of securing a sound knowledge of both languages. In the intermediate schools a method is proposed, and it is suggested that particular stress should be laid upon the study of Welsh history and literature as a means of general culture. Finally, the Society holds that it is desirable that training colleges and day-training departments in Wales should direct their students' particular attention to scientific methods of language teaching, and should encourage their Welsh-speaking students to perfect their knowledge of that language. The scheme is throughout very carefully drawn up.

THE difficulties with which Intermediate Education in Wales has to contend may be illustrated from the case of the Rhyl County School. The new school buildings, it is expected, will be ready for the formal opening in July. When the subscription list is examined, it is found that the list of actual payments is much smaller than the promises, and that of the latter a large number have not been redeemed; in several cases, indeed, they have been withdrawn. The reason given for the non-fulfilment of the promises is that they were obtained years before the scheme was passed, and possibly many who promised did so under the expectation that their children would gain the advantages of the school. In the meantime their children grew up and "finished their education" elsewhere. Moreover, it was suggested that the Church people were reluctant to help because the Nonconformists had a preponderance in the control. It was eventually resolved to send a circular appealing for the payment of subscriptions promised.

MR. THOMAS DARLINGTON, H.M.I.S., made an interesting and valuable speech at a conference held at Bala, called by the Merionethshire County Governing Body, on the subject of the instruction of pupil-teachers. He pointed out that the pupil-teachers' system was devised as the readiest means early in the last century of obtaining a supply of teachers. This system has outlived its usefulness. Supposing such a state of things in a foreign country, he imagined the proceeding there would be to make a clean sweep of the whole system. But that was scarcely in accord with the *genius* of the English people. Still, "if there was anything wrong in the methods of teaching, or in the general spirit of our elementary schools, we could not expect to get rid of it until our young pupil-teachers were got out of the old grooves and the old traditional way of looking at things. What, then, could be more fitting than that pupil-teachers-to-be should be taught in the secondary schools before teaching in the elementary schools, especially when we remember there are 80 or 90 such schools at the service of Wales?" He then alluded to the inititative taken by Blaenau Festiniog in this matter, and warmly recommended the Conference to scheme for the instruction of pupil-teachers put forth by the Aberystwyth College to managers of elementary and intermediate schools.

MR. A. G. LEGARD, His Majesty's Chief Inspector of Schools for Wales, stated his views on education such as should be given in country districts, at the Board School, Carnarvon, last month. The aim of education, he contended, is the same in the rural school and in the town school. But the means are different. The difference of teaching methods now from what they were in the past is the guarantee that education may be regarded as a progressive science. Mr. Legard proceeded to deal with Nature teaching. He advocated school walks and expeditions, not merely as play but as the types of an educational method. There should be sound preparation beforehand. On the expedition, keenness of observation should be aroused. There should be encouragement of the collection of specimens. Children should draw what they see. Afterwards, they should write compositions on what has been seen. Moreover, the teacher should seize the opportunity of bringing himself into touch with the interests of the children. From such lines of thought as Mr. Legard suggested, it is perfectly clear that, in a country with such beauties of nature as are possessed by Wales, there is a great deal of priceless value that has been overlooked in educational practice. But the most interesting point of all is that now we begin to find some of the Inspectors among the educational prophets.

CURRENT HISTORY.

HE who was till the sixteenth century the undisputed head of Western Christendom was first a spiritual ruler, and only afterwards obtained territory over which to rule as suzerain lord—a territory which has now shrunk into the Vatican hill at Rome. By way of contrast to this, the Sultan of Turkey had long been the temporal lord of the Othman (or Ottoman) Turks, when in 1578 he was recognised as the Khalif, or spiritual ruler of Islam. The action of Sultan Selim may be understood if we suppose that Henry VIII. of England, instead of satisfying himself with the title of Supreme Headship of the Church in

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England, had claimed that of all Western Christendom, and had made good his claim. It is necessary to remember this bit of history in order to understand what is reported in the papers as now happening in Arabia. It is said that a book has been published called "Mecca," urging the Arabs to throw off the Ottoman yoke, and that "Essid Hamid Eddin, of the family of the Prophet (*i.e.*, Mahomet) has proclaimed himself Khalif." The Moslem world is uneasy in many ways; it is interesting to see old-world ideas still at work there, still shaping in religious forms what the more modern-minded do under other names.

IN 1851 the first Great Exhibition was opened in London to inaugurate a reign of universal peace. Shortly afterwards the building was transplanted to Sydenham with all its associations of international ideas, and with a further programme of education in art and science for the nation. Fifty years have passed since then, and the Crystal Palace is this year to celebrate its Jubilee. But how? Lately 114,000 flocked to its grounds to see twenty-two professional football players contend for a cup, and this summer the directors propose to hold a Naval and Military Exhibition. Shall we laugh or weep?

AND yet the world does move! The Hague is once again to give the law to Europe; not as it did in 1689-1697, when the Stadtholder-King drew Emperor, kings and princes to his great alliance against the "Grand Monarque" whose ambition was a terror to his neighbours, but as the great Dutchman dreamed who wrote the "De Jure Belli ac Pacis." Europe was, indeed, distracted when Hugh Groot wrote his book in 1625. Wisely he adapted the rules of Roman Imperial Law to the condition of states that, to one another, were in a "state of nature," a state of war. Since his time the work has gone on, not steadily, but by fits and starts. Europe has now a law, and a court to administer that law. As the various states of the great North American Republic settle their disputes by reference to their Federal Judicature, so may the states of Europe appeal to the court which is henceforth to sit at the Hague. Rome still rules the nations as of old. But will they obey?

SOME people are wanting an enquiry into the conduct of the South African war with a view to finding out *who* was responsible for our failures. How deep-rooted is the notion that Great Britain cannot be defeated unless by someone's fault. We put down our failures to "someone's" incompetence, just as the French attribute theirs to "treachery."

> This England never did, nor never shall
> Lie at the proud foot of a conqueror,
> But when it first did help to wound itself.
> . . . . . Nought shall make us rue
> If England to itself do rest but true—

brought down the plaudits of the house in Elizabeth's days. So now, according to Lord Salisbury, "the people who are asking for enquiry are looking at it as a personal matter. They wish to know distinctly who is to blame for each disaster and each shortcoming in the war." They are like the folk who in 1701 wanted to prevent the existence of a Cabinet and who required, in the Act of Settlement, that the Privy Council should retain its old powers, and that "all resolutions taken shall be signed by such of the Privy Council as shall advise and consent to the same." But that famous Act did not work, and was soon largely repealed. So now Lord Salisbury does not think "it is desirable to know *who* is to blame."

"FORESTALLING," "engrossing," and "regrating" were evils of which we hear much in mediæval satires such as "Piers Plowman," and against which there was much legislation. We refer our readers to the text-books for the technical explanation of these strange words. But we can see the things thereby denoted fully exemplified in modern commerce. In the United States of America, where so much is familiar and so much is strange and bewildering to the stay-at-home and conservative Englishman, these mediæval "crimes" now flourish luxuriantly under the name of "trusts." So careful were the "fathers" of the great western republic to secure against legislative interference the freedom of the individual, so jealous were the various States of the possible developments of a centralised authority, that all the developments of combination in commerce have there full play. Whether for good or evil, there seems nothing in the United States of America to prevent the union of al those engaged in any industry for whatever purpose they have in hand. By way of contrast to this, note that in the centralised State of France, a man who recently bought up eighty per cent. of the stock of loaf sugar, and manœuvred to raise the price, has been prosecuted for his act, and if found guilty will be subject to imprisonment for possibly a year.

A FRENCH VIEW OF EDUCATION.[1]

"APRÈS le pain, l'éducation est le premier besoin du peuple." M. de Coubertin shows himself, throughout this interesting and important volume, to be in complete agreement with Danton's aphorism. Bringing to his task a thorough acquaintance with the education of the chief countries of Europe and of the United States, he has succeeded admirably in the work he set himself. "Dans ces *Notes* je n'ai d'autre ambition que de fixer quelques traits caractéristiques de la transformation qu'elle subit et de signaler, au passage, quelques solutions qui paraissent désirables ou probables."

First, the directions in which modern democracy tends to modify the work of the school, the college and the university, are passed in review. The increased interest taken in educational questions by the State in all parts of the world is noted and, in general, approved. As M. de Coubertin says:—"Quand on voit les célèbres 'Public Schools' d'Angleterre, citadelles du particularisme, incliner à leur tour vers l'idée d'un contrôle officiel, et leurs *Headmasters*, réunis en conférence, discuter favorablement le principe de l'inspection, peut-on doubter qu'on soit en présence d'une irrésistible évolution?" The author, however, duly respects scholastic freedom and values the individuality of the schoolmaster. More than once he speaks enthusiastically of the work of Arnold, and attributes to it a profound influence on the ideals and practices of continental educationists as well as upon our own public schools. "Son influence sur les destinées de l'empire britannique fut décisive. Dans tous les services publics comme dans toutes les manifestations de l'initiative privée, son action s'est fait sentir."

In the consideration of secondary education, several of its most prominent weaknesses are first exposed, and then traced to the almost universal adoption of what is called the synthetic method of instruction, excellent at the time of its adoption, but in this year of grace, when science has added so lavishly to the sum of human knowledge, quite inadequate. The only rational course to pursue to-day is, it is urged, an analytical process. We should look upon secondary education "sous la forme d'une vaste revision du monde terrestre et de l'œuvre accomplie par l'humanité; plan dont le grand avantage serait de donner à l'adolescent une vue d'ensemble (plus ou moins précise, selon le temps dont il dispose) de l'univers, tel que le lui ont préparé les lois physiques et les efforts des hommes, et en même temps, de lui permettre de décider de sa carrière plus librement et plus en connaissance de cause."

Physical education receives exhaustive treatment under the

1 "Notes sur l'Éducation Publique." By Pierre de Coubertin. 319 pp. (Hachette et Cie.) 3fr. 50c.

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three divisions of sports, military and hygienic gymnastics. The history of the development of the widespread love of sports is of particular interest. The clear way in which, while recognising the value of bodily exercises, the respective domains of each of the three branches of physical education is defined, will prevent effectually the reader from supposing that any neglect of the equally urgent demands of mental training is to be tolerated in the education of youth.

The many-sided subject of how properly to bring up boys and girls is regarded also from other points of view. The work of the university, moral training, instruction in art, the needs peculiar to the education of women and other questions, are one and all discussed. There is invariably something luminous and helpful to be found. M. de Coubertin is no mere pedagogue; he is a philosophical man of experience, with an admirable gift of expression. Not that English readers will subscribe to everything he says; but, if they read carefully, they will be set thinking, and, whether they like it or not, will soon find themselves beginning to take stock of their individual equipment for the serious business of forming character.

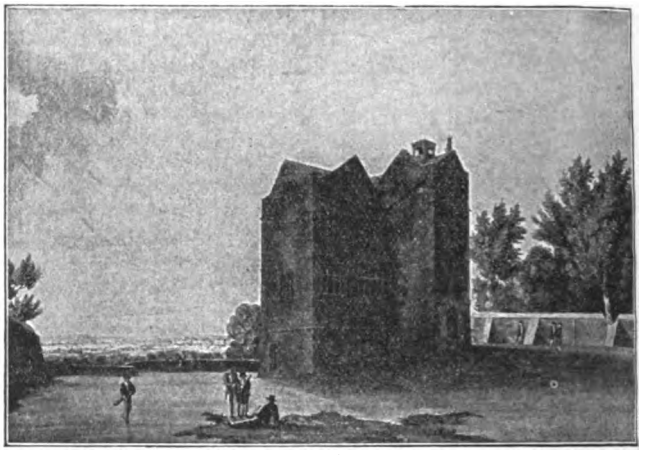
We have marked many charming little paragraphs, but will only reproduce one :—

"Si l'humilité compte encore au nombre des virtus qui gagnent le ciel, il est depuis longtemps reconnu qu'elle ne gagne pas la terre, et nul ne souhaite de la voir pratiquer par ses fils; je parle de la véritable humilité et non de cette qualité charmante qu'on nomme la modestie."

The book deserves to be widely read, and we recommend it to our readers with the greatest confidence.

A HANDBOOK TO HARROW.[1]

MR. WILLIAMS'S "Harrow" is an interesting book, the best, in our opinion, of this series; but the interest has been gained by departing somewhat from the prescribed plan. These books are intended to give a detailed picture of the schools as they are to-day, to be a kind of glorified guide-book, with just a sketch of the history. But as there is no satisfactory history of Harrow (the pretentious "Book of Harrow School" as little deserves the name as the showy and shallow "Book of Rugby School"), Mr. Williams has given nearly half his book to the history. Indeed, he has included some new matter in this section, and it is so well written that the critic cannot but wish he had taken his history more seriously. Harrow history does not present any special features of interest, but, like other English schools, it is itself, and worth study for that reason. The programme of school work in the sixteenth century is given, which shows some peculiarities, chiefly negative, such as the absence of all the Greek poets except Hesiod. A system of taking places is seen to have been in use, and some suggestions are made for class management which are decidedly original. The founder, it may be remarked, allowed play only on Thursday "if fine," and that "to drive a top, toss a hand-ball, to run or shoot (*i.e.*, with bow and arrow), and none other." There are some quaint anecdotes of masters, such as Cox, who taught to the accompaniment of pipe and pint-pot, and the great Parr, who was not made headmaster. Harrow, like Rugby, owes its later organisation to Etonians, in this case Brian and Thackeray. The contest for the "silver arrow" is not so picturesque as Montem, but it is curious enough to deserve Mr. Williams's detailed description and the picture he gives of it from the eighteenth century. A list of benefactions fitly concludes the historical part of the book; the rest is concerned with the buildings, work



The Old School, Harrow.

games, and the famous songs which are Harrow's chief claim to distinction above other schools. Mr. Williams gives time-tables of work not only from the present day, but from earlier periods. This is a most useful handbook, which all old Harrovians should possess.

[1] "Harrow." By J. Fischer Williams, M.A. With 48 illustrations. (Bell's Public Schools.) 3s. 6d.

SOME HISTORICAL NOVELS OF THE YEAR.

THOUGH many literary critics continually pour contempt on the historical novel, there seems to be little, if any, diminution in the output of that particular kind of prose fiction—or rather, of the many varieties of book which are conveniently called by that general name. There appear to have been but few published in the first two months of the present year, but since that time they have come thick and fast from the press, insomuch that, though only a moiety of this total output has reached us for review, we have not been able to work through them all in time for adequate notice in this number. Reading the novels more or less in the chronological order of their subject-matter, we have not been able to reach the attractive-looking group dealing with the nineteenth century.

Let us repeat that our object in these columns is not to attempt a critical review of the books—that our space forbids—but rather to give such an account of them as may be helpful to the teacher. In this connection it may interest those of our readers who take the historical novel seriously as an instrument of education, but who are puzzled by the considerable difficulty of selection, to know that a very short list—one for the reign of each English King since Edward Confessor—was contributed to the *Literary World* of April 26th, 1901, over the signature "J. Nield." Teachers who are interested in the subject would do well to make their own selection before consulting Mr. (?) Nield's: the differences would, we fancy—and we tried the experiment ourselves—not be without a certain value.

Turning to the eight novels noticed below, we may call attention at the outset to a few general features. There is still a predominance of the dashing adventure species representing a kind of Dumas-Weyman mixture: under this heading may be ranged numbers (4) to (7); (2) reminds us rather of G.P.R. James and Mr. Henty; (1) is mainly an archaeological and geographical novel; while the two which impress us most strongly with a

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sense of artistic and creative power, viz., numbers (3) and (8), are noteworthy not so much for their stirring events, or story, as for their sympathetic characterisation of historical personages and a distressed nationality respectively. By an odd coincidence, seven out of the eight books deal with some phase or other of the Spanish Monarchy, Alva appears as the villain of the piece in three of them, and the device of putting the heroine into boy's apparel finds favour with several of the romancers. All the books, to speak from personal experience, fulfil in their several ways the prime duty of fiction—to be "interesting."

(1) WILLIAM DUDLEY FOULKE. ." Maya, a Story of Yucatan." [Pp. 219; 5 Ill.] (Putnams.) 5s.—The first thing that strikes one about this book—which is printed at the Knickerbocker Press, New York—is the great beauty of the binding, the typography and the illustrations. This would bias one in favour of the book even if the literary matter were rubbish. But it is not rubbish: it is a romantic but perfectly "convincing" account of the contact between an early Spanish adventurer in America and the old Maya civilisation of Yucatan. The hero is represented as one of the wrecked (1512) followers of Balboa—the discoverer of the Pacific—who was *not* rescued by Cortes; and the story turns on his married life with a Maya princess. The author has been a traveller in Yucatan; he has the sympathy of the educated American with the older civilisations of North America; and he tells his story simply and effectively. For the rest, the geographical features of Yucatan are admirably described; and the pictures are for the most part photographs of "the abodes of that wonderful people whose ruined cities are to-day the noblest monuments of aboriginal art."

(2) S. M. S. CLARKE. "The Duke's Page." [Pp. 407; 16 Ill.] (Nisbet.) 2s. 6d.—"The Duke" in question is Maurice—Duke, and afterwards Elector, of Saxony; and the book is mainly occupied with his short, brilliant and somewhat incomprehensible career from his accession to the dukedom in 1531 to his death at Sievershausen in 1553. The publisher's claim that historical accuracy has been preserved is amply justified; but here, as nearly always, this accuracy has not been gained without a certain heaviness and savour of the midnight oil. But, speaking as an adult about a book that appears in a well got-up series entitled "The Boy's Holiday Library," the present writer finds Mrs. Clarke much more pleasant to read and much less ostentatiously instructive than Mr. Henty. Maurice is an interesting and important personage about whom English boys are not likely to learn much in their ordinary school-work, and about whom it is well worth while to know something. The fact that Edward VI. did not help the Protestants in the Mühlberg campaign, or in Maurice's later march against the Emperor, is almost the only point at which the story comes into contact with English history, as usually told in our schools. Nearly all the places named in the story are shown in Putzger's Atlas, plate 36; and the reader makes a close acquaintance with several historical personages besides Maurice—*e.g.*, Charles V. and his Ministers Alva and Granvella, Luther and Carlowitz, and various notable members of the Hapsburg, Hohenzollern and Wettin families.

(3) FRANK MATHEW. "The Royal Sisters." [Pp. 313.] (John Long.) 6s.—Mr. Mathew's book is an odd mixture of similarity and contrast to that of Mrs. Clarke. Like her, he deals mainly with real historical persons and happenings: unlike her, he tells his story almost wholly in dialogue and leaves the rest to his reader's imagination. We are, we regret to say, unacquainted with anything more than the names of Mr. Mathew's previous works, but if they are anything like as good as this they are books to read and—but for an occasional tendency to call a spade a spade—books worth adding to school libraries. The "Royal Sisters" are Mary and Elizabeth Tudor; the episodes treated are the brief reign of Queen Jane and Wyatt's Insurrection in 1553-4; the historical characters who practically have the board all to themselves are the "Royal Sisters," Northumberland and his sons Guildford and Robert, Lady Jane Grey, Renard, Philip of Spain, Wyatt, Pembroke, Arundel and Lord William Howard of Effingham, Lord Admiral and father of the English commander against the Armada; and the narrative is boldly put into the mouth of the last-named. The good side of Northumberland's personality and the bad side of Elizabeth's are admirably depicted; and the characterisation of all the personages is powerful and true. News seems to travel somewhat faster than we should have thought possible, and we do not see why Charles V. should be labelled "Emperor of Spain." Otherwise, we unreservedly commend the book to the notice of teachers, and indeed to all who are glad to get hold of a novel which has a distinct style of its own.

(4) H. RIDER HAGGARD. "Lysbeth: a Tale of the Dutch." [496 pp.; 26 Ill.] (Longmans.) 6s.—Mr. Haggard has been reading Motley, as some years ago he had been reading Prescott; and the result is a good story about the Netherlandish Rising against Philip II. The story begins at Leyden in 1544—when Lutheranism was only just beginning to lay hold of the Northern Netherlands—and ends with the siege of that city in 1574, and with a picture of the principal characters living peacefully in the author's loved city of Norwich. Mr. Haggard's attitude may be inferred from the dedication of his book to William the Silent as "one of the greatest and most noble-hearted beings that the world has known," and the description of Charles V. as "the carnal, hare-lipped, guzzling, able Hapsburg self-seeker." In short, he writes with firm conviction as a good Protestant and a thorough Englishman. We imagine that the book would not be agreeable reading for Roman Catholics, and we rather wonder why no enterprising member of that communion does not make a fictional reply to the many fictional attacks on the sixteenth-century Inquisition.

(5) H. C. BAILEY. "My Lady of Orange." [240 pp.; 8 Ill.] (Longmans.) 6s.—The story has the same general subject-matter as that of Mr. Haggard—the Dutch resistance to Spain—and is excellently illustrated by the same artist, Mr. G. P. Jacomb-Hood, but it is much shorter, and is told with a difference of style and standpoint which makes it peculiarly interesting to read it alongside of "Lysbeth." The book is not in the slightest degree a Protestant tract, but it consists of a typical series of deeds of derring-do in Holland during the year 1573—ending with the relief of Alkmaar. The narrator is an English soldier of fortune, who transfers the services of himself and his troop from Alva to William of Orange simply and solely because Alva does not pay his army. In the course of the story the narrator undergoes a change of character not unlike that of the hero of "Under the Red Robe." Historical personages such as Alva, Vitelli, William the Silent and Diedrich Sonoy are introduced, but most of the characters and incidents are "historically fictitious," though "artistically true."

(6) J. CUTCLIFFE HYNE. "Prince Rupert the Buccaneer." [287 pp.; 8 Ill.] (Methuen.) 6s.—The title and the author's name suffice by themselves to convey a notion of the contents of this book. After Charles I.'s execution, Blake chased Prince Rupert and the Royalist fleet out of Europe into the West Indies, and—to adapt a phrase from a once popular school-history—"this book tells the dark and bloody tale." Mr. Hyne does not admire Cromwell or his treatment of the transported "Malignant" *engagés*; but he gives a very vivid idea of some aspects of West Indian life and of a late phase of the Great Civil War which is commonly ignored in our text-books. The story is put in the mouth of a girl who followed Prince Rupert in the disguise of his secretary, who was never found out, and who "never told her love."

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(7) HARRIS DICKSON. "The Black Wolf's Breed." [288 pp.; 6 Ill.] (Methuen.) 6s.—Mr. Dickson's warrior-hero is a French captain who served under Bienville, the Governor of Louisiana, during the latter days of Louis XIV., shortly after La Salle had made his memorable voyage down the Mississippi and thus sowed the seeds of the mighty quarrel which culminated in the Seven Years' War. The story is mainly laid in Louisiana, but sometimes moves to Versailles and Paris; it is full of life and "go"; and it gives a good idea of frontier life in a new European settlement among the Indians. The book may be particularly recommended to teachers and pupils preparing for the Cambridge Local Examination this year.

(8) JULIA M. CROTTIE. "The Lost Land." [266 pp.] (Fisher Unwin.) 6s.—Miss Crottie's new book is more distinctly "historical" than that which we had for notice in these columns some months since. The sub-title runs, "a Tale of a Cromwellian-Irish Town: being the autobiography of Miss Annita Lombard, 1780-1797." The book is quite free from the intrusion of historical personages, and is occupied with sketching the condition of society in a part of Ireland just before the 'Ninety-eight. The sketch of "the rainy, old-world Munster town, with no life stirring but the ugly life born of stagnation and rottenness," is horribly depressing; it is certainly written with great sympathy and power; and it is, we fear, true in the main. Reading the book brings us face to face with at least two questions. Firstly, were the Irish themselves, or was the British Government, chiefly responsible for the lamentable state of things here depicted? That is a question which Mr. Lecky and Mr. Ingram seem to answer in very different ways. Secondly, is Miss Crottie's conception of Irish national character—or, to speak more precisely, of Munster provincial character—true to the life? The publisher quotes various "Saxon" and "Keltic" opinions that it is; but, on the other hand, the writer has been assured by several Irish friends that Miss Crottie's Irish folk are impossible, and not to be compared with those of Miss Barlow, Father Sheehan, or Dr. Barry. We can merely state these problems, not attempt to solve them; but whatever be the facts, we are much obliged to Miss Crottie for her extremely capable statement of her view of the case.

RECENT SCHOOL BOOKS.

Modern Languages.

Historical Reader of Early French. By H. A. Strong and L. D. Barnett. x.+200 pp. (Blackwood.) 3s.—This book contains a very good selection of inscriptions, extracts, &c., designed to illustrate the gradual changes of Latin and the development of French up to the end of the fifteenth century. In almost all cases there is a literal English rendering in parallel columns. Teachers of advanced classes will be able to make good use of this book as a supplement to their lectures; it can less confidently be recommended for private study. The editorial work shows much inconsistency; the same word is annotated several times, and not always in the same way (*cf.*, for instance, the note on *plevis* on p. 82 with that on p. 130). In one case we have *ex-paventum-are*, in another *tent(um)-tare*, and then again *glaciem-are*, as original forms. Most of the pieces have short literary introductions; but why is there none to the *jeu* of "Robin and Marion," and to the *Mystère de la Passion?* That Joinville is assigned to the thirteenth *and fourteenth* centuries may pass, as part of his book was not written until 1305; but to find Villehardouin and Guillaume le Maréchal appearing in the fifteenth-century section is disconcerting. The grammatical part is also singularly incomplete; sixteen pages are given to the phonology, and only three to the accidence. The impression left on the reader's mind is that the manuscript of this book was sent to the press before it had been sufficiently revised, which alone prevents it from being a thoroughly satisfactory piece of work. We trust that the editors will reissue it before long in a form which will enable us to regard it as a worthy pendant to the "Chrestomathie du Moyen Age," by Paris and Langlois.

Schiller, Wallenstein. Edited by Max Winkler. lxxvi.+446 pp. (Macmillan.) 3s. 6d.—We regret that we have not sufficient space to do more than express our delight at this excellent edition of Schiller's play. The series of German classics which is being prepared under the general editorship of Professor Hewett, of Cornell University, and in which some twelve volumes have already appeared, all the work of American scholars, fills us with gratitude not unmingled with envy. We heartily recommend every student of German to read Professor Winkler's very careful and well-written introduction before approaching the study of *Wallenstein.* The notes, full as they are, still keep to the point; and there is a good index to persons and places.

German without Tears. (Third Part.) By Mrs. Hugh Bell. vi.+126 pp. (Edw. Arnold.) 1s 3d.—This is a translation, by A. H. Hutchinson and S. Batsch, of Mrs. Hugh Bell's "French without Tears." According to the title-page, it is meant for the nursery and the kindergarten; the stories are indeed too childish for school use. Those who think it wise to teach the beginnings of a foreign language to very young children may find that the book suits their purpose. It is a pity that the vocabulary is not complete, and that the illustrations are poor.

The Age of Louis XIV., as described by French Contemporaries and French Historians. Edited by F. W. B. Smart, B.A. xix.+156 pp. (Black.)—Mr. Smart combines a good knowledge of history with much practical experience as a teacher of French, and the preparation of this volume could not have been entrusted to one better fitted for a somewhat difficult task. He has produced a volume which will be welcome to any teacher of an advanced class who wishes to give his pupils some idea of an exceptionally interesting period of French history. Mr. Smart has exercised a wise self-restraint in his introduction and notes; they are brief, but thoroughly helpful. The inclusion of a number of passages from Commines is particularly to be commended; and we notice with pleasure a list of subjects for essays based on the extracts.

Jackson's German Copy-Book. 24 pp. (Sampson Low, Marston.)—Personally we are fully in agreement with Mr. Jackson as to vertical writing being best for writer and reader alike; and we are glad to see this copy-book of vertical German writing. At the same time it must be acknowledged that a good many Germans object to it, especially when used for commercial letter-writing.

Classics.

The Letters of Cicero. Translated by E. S. Shuckburgh. Vol. IV. xlvi. + 386 pp. (Bell.) 5s.—Mr. Shuckburgh has not kept us waiting long for the final instalment of his work, and the whole of Cicero's extant correspondence is now before the English reader and the student. The Introduction, as in the former volumes, gives us an insight into, or a reminder of, the events in the space of time covered by the Letters contained in the book, which in their turn lay open to our view many of the "ins and outs" of the period which do not appear on the surface of affairs. The preface contains a list of corrections and additions to the four volumes, and also the emendations

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proposed by the translator. Of the latter the most striking and ingenious are perhaps *Tullianarum aedium* for the hopeless MSS. reading *tuli luminarum aedium* (in Letter dcclx., where the note should be read), *Olympia sunt* for *olim piaculum* (dcclvi., where the rejected words *mysteria scilicet* certainly read like a gloss on the corrupted text), and especially *ὁ θησαυρὸς ἀνθρακες* for *ὅτε ναῦς ἄνθρακες* (dccxxxiv.). The substituted reading is found several times in Lucian "as a proverb for disappointed hopes," something like our "apples of Sodom," which Mr. Shuckburgh does not quote. With regard to the translation of the Greek words with which Cicero so freely garnishes his letters—a point which has not been touched on in these pages—Mr. Shuckburgh's versatility of rendering may be gathered from one letter (dcclxvi.) which contains five Greek words or phrases, one of which appears here as Latin, *quousque tandem?* another as French, *canard*; another as the colloquial *stingily*; another as pure slang, *That's all Moonshine*; while one, probably a quotation from Atticus himself, is given in good English. This volume concludes with an index to the whole correspondence; and we must conclude this notice by congratulating both Mr. Shuckburgh on the completion of a task worthily accomplished, and also those who will make use of the work on having so competent a guide in their studies.

Plato: Meno. By E. S. Thompson, M.A. lxvi. + 319 pp. (Macmillan.) 5*s.*—This edition will be indispensable for the student of Plato. It is somewhat ponderous, perhaps, for schools — many of the notes extend over more than one page; but the sixth-form boy, or the undergraduate, who carefully works through the book will have obtained an insight into Platonic philosophy and usage which will be of the utmost advantage to his future studies. A large part of the introduction is devoted to the "problem of the order of Plato's works," and the inter-relationship of "the educational dialogues." The date of the *Meno* is discussed, and due attention paid to the "Method of Stylometry," a hobby which has been sometimes too vigorously ridden of late, but which in the case of the *Meno* agrees with the editor's conclusions. The commentary, as hinted above, is very full, and full of learning and scholarship. We notice a slip on p. 161, where the sign for "because" in the syllogism should be that for "therefore." After the notes come seven excursuses running into 50 pages, three on grammatical points, and the others on the *οὐσία* of Plato, Eristic, Transmigration, and *δόξα* and *ἐπιστήμη*, and there are indexes of words and matters.

In the "University Tutorial Series" we have received the following:—*Ovid: Metamorphoses III., lines* 1-130. By W. P. Steen, M.A., and B. J. Hayes, M.A. 44 pp. 1*s.* 6*d.* *Aeschylus: Eumenides.* By T. R. Mills, M.A. 94 pp. 3*s.* 6*d.* *Herodotus: Book IV. cc.* 1-144. By W. J. Woodhouse, M.A. 124 pp. 4*s.* 6*d.* *Livy: Book XXII.* By J. Thompson, M.A., and F. G. Plaistowe, M.A. 136 pp. 2*s.* 6*d.* *Cicero: Philippic II.* By A. H. Allcroft, M.A. 130 pp. 3*s.* 6*d.* (Clive.) Mr. Hayes and his fellow experts continue to produce the class of books which are so familiar and so useful to those preparing for the examinations of London and other universities. The first named contains the prescribed subject for the Cape of Good Hope University Matriculation next year, and is first in the market with English notes. In addition to the usual exhaustive commentary, &c., it has papers of test questions at the end.

Geography.

A Natural System of Map Drawing. By A. W. Bickerton. 15 pp. (Swan Sonnenschein.) 6*d.*—Teachers will find this a suggestive little book. Professor Bickerton explains and illustrates his method of memory map-drawing. It is very ingenious, but the mnemonic clues given are somewhat complicated.

General Geography of the World, with the Elements of Physical Geography. Being Book III. of the Tweeddale Geographies, Senior. vii. + 249 pp. (Oliver & Boyd.) 1*s.* 6*d.*—This text-book is quite as good as most of the geographies in use in schools; it is, indeed, better than some, inasmuch as descriptive matter of an interesting nature has been substituted for the mere name-lists which generally bulk so largely in school geographical handbooks. It is remarkably cheap, too, and teachers will do well to examine the book for themselves. There are one or two points that might be attended to in future editions, *e.g.*, the definition of a bay as "an opening into the land, having a wide mouth," is out-of-date, as is also the reference to the climatic effects on Great Britain of the Gulf Stream. It would appear from the map, on p. 71, that trains from Leeds to York have to go *viâ* Selby. This is not the case. The maps, by the way, are a valuable addition to the book; there are sixty-three of them, and they are both accurate and clearly printed.

Grammar.

Key to West's Grammars. By the Author. 112 pp. (Cambridge University Press.) 3*s.* 6*d.*—"I never set my boys any of the questions at the end of West's chapters, because I cannot answer them myself," is the sort of remark one often hears. This is not indicative of any fault of the author's; his two books on English grammar are among the best we know. It is simply an illustration of the incompetency of the average 'Varsity man to teach his mother-tongue. For grammatical purposes English is to him a useless medium of instruction; he knows one grammar well, viz., Latin, but in English he is generally utterly at sea. We have known a first-class honourman parse "the" as a pronoun, and a question as to the meaning of "strong," as applied to verbs, resulted in the immediate expulsion of the inquisitive youth from the class-room. This key will supply a real want to the majority of teachers, male, at any rate. It is well arranged, and the answers are carefully drawn up. Why does Mr. West parse *his* as a possessive pronominal adjective? In "John's book" are we to call *John's* a possessive nominal adjective?

History.

An Outline History of the British Empire, 1500-1870. By W. H. Woodward. viii. + 232 pp. (Cambridge University Press.) 1*s.* 6*d.* net.—This is an abridgment of the author's "Short History of the Expansion of the British Empire" which we welcomed two years ago. The arrangement of chapters and the general order of the subject matter have not been varied, and therefore it is excellently adapted to put into the hands of pupils, while the teacher reserves for himself the "Short History." All the maps but one of the other book are also retained, and we take this opportunity to heartily recommend both books to those who have not yet heard of the author. It is a most excellent piece of work, and cannot be neglected by any who teach any part of the period covered.

Mathematics.

The Teaching of Mathematics in the Higher Schools of Prussia. By J. W. A. Young, Ph.D. xiv. + 142 pp. (Longmans.) 2*s.* 6*d.*—The author spent nearly a whole academic year in examining the methods and results of the higher German schools, with particular reference to the teaching of mathematics. He gives a clear and impartial account of the German system, with reference to official and other printed sources of detailed information. The book deserves attentive reading, and cannot be summarised with advantage. Without suggesting that the Germans have evolved a perfect system, it is clear that their

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training of teachers is really effective; that a teacher, once approved and appointed, is fairly free from pecuniary and other anxieties, has a good social status, and is stimulated to do his best; and that their plan of oral class-teaching, with very little reference to text-books and hardly any home-work, produces excellent results in competent hands. So far as the subject of mathematics is concerned, Prof. Young asserts that the Germans do as much in 1·2 years out of a 9 years' school course as the Americans do in 2·1 years given to the same work.

Woolwich Mathematical Papers for Admission into the Royal Military Academy for the Years 1891-1900. Edited by E. J. Brooksmith, B.A., LL.M. (Macmillan.) 6*s.*—This reprint of a very useful collection of papers differs from the last by the omission of the questions set in 1890 and the insertion of those set in 1900. In the year last mentioned no serious change was made in the character of the examination.

The Elements of Geometrical Drawing. By H. J. Spooner, C.E., &c. xl.+298 pp. (Longmans.) 3*s.* 6*d.*—This is written for South Kensington and Army candidates, and is likely to serve its purpose satisfactorily. A feature of some novelty is a chapter on geometrical designs and mouldings; the examples are of unequal merit from an æsthetic point of view. There is a fairly good sketch of descriptive geometry, as applied to simple solids, and a few pages are bestowed on indexed plans. The book is, on the whole, free from rubbish, although we find, for instance, as exercises in *practical* geometry the trisection of a line by the methods of Euclid I., the time-honoured approximate construction of a regular polygon, and a few others equally useless. On p. 61 the reference to "John Machin Gresham, Professor of Astronomy," will mislead the unwary, and on p. 172 the misprints "limacon" and "Bernouilli" require correction.

Science and Technology.

An Introduction to the Study of Physics. Vol. I. General Physical Measurements. By Allan F. Walden, M.A., and J. J. Manley. vii.+252 pp. (A. & C. Black.) 3*s.* 6*d.*—It will not be long, at the present rate, before every teacher of physics will have written a book on the subject. The appearance of so many text-books during the last two years is partly to be accounted for by the recent introduction of physics as a practical subject into the school curriculum. It would seem as though the methods of teaching experimentally the fundamental facts regarding the physical properties of matter at present adopted are not considered quite satisfactory, and after the accumulation of a little experience, the teacher becomes impressed with the idea that his course of work is an improvement on all the published collections of experiments. The book before us is, the authors say, "neither a text-book of theoretical physics nor a laboratory manual of practical physics." This is quite true, and we cannot help thinking that by adopting neither course an opportunity of being helpful to one part, at least, of a student's work has been missed. This book will not do for lecture work exactly, nor can it be placed in the hands of a boy for the purpose of guiding his practical work. And yet it is an interesting introduction to physical measurements. If there were no examinations to be thought of, and if the amount of time at the disposal of the teacher were unlimited, the book might well be used to start the more intelligent boys in the study of physics. It should be pointed out that the only subjects dealt with are the measurement of space, mass, density, and time; together with some of the properties of liquids and gases. The experience gained by the authors in the Oxford laboratories is sufficient guarantee of the trustworthiness of their science. We do not, however, like the expression (p. 226) "the size of a second." We advise teachers of the subject to give the volume a careful examination; they will certainly find several sections very suggestive.

Miscellaneous.

The Englefield Easel (height, 3 ft. 5 ins.; width, 1 ft. 8 ins.) Designed by Arthur Englefield, Headmaster Gloucester Municipal School of Art. 5*s.* to 8*s.*—This is a decided improvement on the ordinary form of school easel. The two front legs are parallel and fixed sufficiently wide apart to allow of the student's putting his chair between; and the back leg, which is attached by hinges to a bar between the two front ones, is furnished at the base with an india-rubber pad. Altogether the easel is very much more rigid than those of the ordinary shape, and will not be so easily upset or disarranged by the teacher when going his rounds. Another advantage of the new pattern is that, as the front legs are so wide apart, the back leg need not be very much spread out, so that when several students are working from the same model, or when large numbers of candidates have to be accommodated in an examination-room, they can be arranged to much better advantage than is usually the case, and the students can sit well back in their chairs and at the same time keep their work at a reasonable distance from them. The tray for materials is fixed and can be used to support the drawing-board at a lower level. The only drawbacks to this excellent little easel seem to be that it is somewhat higher in price (though it is much better made) than the ordinary pattern, and that, as it does not fold up, it occupies rather more room when not in use than its rivals of the old type.

SENIOR OXFORD LOCAL EXAMINATION, JULY, 1901.

Revision Tests.—No. 2.

Arithmetic.

(Pass Paper.)

(1) Find the L.C.M. of 18, 32, 56 and 84.

(2) Divide the sum of $5\frac{8}{15}$ and $6\frac{4}{21}$ by their difference.

(3) Simplify:—

(i.) $2\cdot3\dot{1}+3\cdot2\dot{4}\dot{5}-1\cdot6\dot{1}\dot{8}$;

(ii.) $\frac{3}{10}$ of £3 17s. 1d. + $\frac{5}{17}$ of $\cdot1\dot{8}$ of 1s. 8d. − $\frac{1}{8}$ of 9s. 1d.

(4) What is the price per lb., to the nearest farthing in English money, of butter which costs 3 francs per kilogramme. [£1 = 25 francs, and 1 kilogramme = 2·2 lbs.]

(5) Find, to the nearest penny, the value of 11 tons, 17 cwt., 3 qrs., 7 lbs. at £3 12s. 6d. per ton.

(6) If the wages of 19 men for 15 weeks amount to £456, how much will be the wages of 37 men for 13 weeks?

(7) A plot of land measures 300 acres and is in the form of a rectangle having its length three times its breadth. Find, to the nearest yard, the length of fence which would be required to enclose it.

(8) Find the difference between the discount on £486 8s. 10d. for 10 months at 4 per cent. per annum, and the simple interest on £532 10s. for 8 months at $4\frac{1}{4}$ per cent. per annum.

(9) What sum must have been invested in $3\frac{1}{2}$ per cent. stock at $120\frac{3}{4}$ (brokerage being $\frac{1}{8}$ per cent.) in order to produce an income of £175?

(10) Forty-eight gallons of spirit at 12s. per gallon, $2\frac{2}{3}$ gallons at 10s. 6d., and $19\frac{1}{2}$ gallons at 1s. 4d. are mixed with a certain quantity of water; the mixture is sold at 7s. $10\frac{1}{2}$d. per gallon at a gain of $12\frac{1}{2}$ per cent.; how much water is used?

Answers.

(1) 2016. (2) $17\frac{38}{69}$. (3) (i.) $3\cdot9394876\dot{6}$; (ii.) £1 2s. $2\frac{1}{2}$d. (4) 1s. 1d. (5) £43 2s. 1d. (6) £769 12s. (7) 5566 yards. (8) 9d. (9) £6,037 10s. (10) $19\frac{5}{8}$ gallons.

English Grammar.

HISTORICAL.

(1) What important events in the fifteenth century influenced the development of the English language?

(2) "The grammatical structure of English is pure Teutonic." Illustrate this statement.

(3) What is the origin of our relative pronouns? Distinguish between the uses of *who* and *that*, also between those of *what* and *which*.

(4) What is the meaning and origin of the following words:—Kickshaws, treacle, shamefaced, umpire, lobster?

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(5) Give a short account of the so-called gerund.
(6) What changes in the conjugation of a verb have taken place since the Old English period?
(7) What do you know of Grimm's "Law"? How are certain exceptions to it explained?

English History, 1399-1603.

1509-1603.

Five Questions only to be attempted, of which one must be Q. 6.

(1) State briefly the objects of *two* important ecclesiastical statutes in each of the four reigns covered by this period.
(2) Show clearly why Philip II. was at first friendly, and afterwards gradually came to be at war, with Elizabeth.
(3) Trace the relations of the Tudors with Ireland.
(4) What do you understand by the term Renascence? Give a brief account of it so far as it concerns England.
(5) *Either* (*a*) Explain the meaning of the expression "the spacious times of great Elizabeth," *or* (*b*) describe a day's sight-seeing in Elizabethan London.
(6) Set down in three columns :—(*a*) the following place-names; (*b*) where the places are; (*c*) their chief historical associations during this period:— *Boulogne, Cadiz, Holland, Maynooth, Munster, Norwich, Portugal, St. Quentin, Tournay, Wales.*

Henry V.

(1) Explain carefully the various ways in which Shakespeare appeals to the patriotism of his audience, and quote any allusions to contemporary events.
(2) What current follies was Shakespeare satirising in the characters of Pistol and Nym?
(3) Criticise the scene in which Henry woos Katherine.
(4) Explain the following words and phrases:—Whitsun morris-dance, wafer-cakes, I will verify as much in his peard, the wives of Jewry, the poring dark, *qui a les narines de feu*, on point of fox, rank fumitory, crescive, a nimble galliard.
(5) Write a note on the character of Shakespeare's blank verse, and another on his Syntax, as illustrated in this play.
(6) Paraphrase :—

Thou that did'st bear the key of all my counsels,
That knew'st the very bottom of my soul,
That almost might'st have coined me into gold,
Would'st thou have practised on me for thy use?
May it be possible that foreign hire
Could out of thee extract one spark of evil,
That might annoy my finger? 'Tis so strange,
That though the truth of it stands off as gross
As black from white, my eye will scarcely see it.
Treason and murder ever kept together,
As two yoke-devils, sworn to either's purpose,
Working so grossly in a natural cause,
That admiration did not whoop at them:
But thou, 'gainst all proportion, did'st bring in
Wonder to wait on treason and on murder.

Merchant of Venice.

(1) What is Lorenzo's explanation of Jessica's statement, "I am never merry when I hear sweet music"?
(2) Explain carefully the means by which Shakespeare has knit together the following motives: (1) Antonio as a martyr to friendship; (2) a study of revenge in Shylock; (3) Portia's love-story.
(3) Contrast the characters of Antonio and Bassanio, Lorenzo and Gratiano, Nerissa and Jessica.
(4) Explain in reference to the context:—

I think the Frenchman became his surety, and sealed under for another.

The vile squeaking of the wry-necked fife.

Every word in it a gaping wound,
Issuing life-blood.

This making of christians will raise the price of hogs.

There's more depends on this than on the value.

I am the unhappy subject of these quarrels.

In such a night
Medea gathered the enchanted herbs.

Childe Harold: Canto III.

(1) What power does Byron assign to the creative imagination?
(2) What thoughts are suggested to Byron by mountain scenery?
(3) Explain with reference to the context:—

Shall we, who struck the lion down, shall we
Pay the wolf homage?

He had kept
The whiteness of his soul, and thus men o'er him wept.

Julia—the daughter, the devoted—gave
Her life to Heaven.

Those oracles which set the world in flame,
Nor ceased to burn till kingdoms were no more.

The child of love, though born in bitterness,
And nurtured in convulsion.

Morat and Marathon twin names shall stand.

(4) What was the meaning to Byron of "Liberty" and "Patriotism?"
(5) What are the chief characteristics of Byron's verse? Illustrate with quotations.

Geography.

ENGLAND AND WALES, BRITISH SOUTH AFRICA, FRANCE.

(1) Draw a map of England and Wales. Mark the boundaries of the maritime counties of Wales; draw the 51st parallel of north latitude; trace the course of the Trent, showing what area is drained by it, and insert the names of the principal towns in its basin; indicate the positions of:—The Chiltern Hills, Eddystone Lighthouse, The Mumbles, Middlesborough, Tiverton, Bangor, Keswick, Sittingbourne and the Vale of Evesham.
(2) The isotherm of 49°F. passes through London and Swansea in April; in October it passes through Durham and Carlisle, and dips south into Yorkshire. Explain these facts.
(3) Write a short account of the natural features and the trade of Cape Colony.
(4) What do you know of Vryburg, Palapye, Ookiep, Kimberley, the High Veldt, the Great Karroo?
Trace the course of the Cape-to-Cairo railway northwards.
(5) "The three coasts of France have great commercial, naval and climatic value." Illustrate this statement.
(6) Give an account of the trade of Marseilles.
What is meant by "Great Circle" sailing?

French.

(1) Translate into English:—

(*a*) Les gros des hommes, à la longue, ne se trompe point sur les ouvrages d'esprit. Il n'est plus question, à l'heure qu'il est, de savoir si Homère, Cicéron, Virgile sont des hommes merveilleux; c'est une chose sans contestation, puisque vingt siècles en sont convenus: il s'agit de savoir en quoi consiste ce merveilleux qui les a fait admirer de tant de siècles; et il faut trouver moyen de le voir, ou renoncer aux belles-lettres, auxquelles vous devez croire que vous n'avez ni goût ni génie, puisque vous ne sentez point ce qu'ont senti tous les hommes.

(*b*) A vous en parler franchement, notre métier auprès des grands ne m'a jamais paru agréable; et j'ai toujours trouvé qu'il valait mieux pour nous autres demeurer au public. Le public est commode, vous n'avez à répondre de vos actions à personne, et pourvu que l'on suive le courant des règles de l'art, on ne se met point en peine de tout ce qui peut arriver. Mais ce qu'il y a de fâcheux auprès des grands, c'est que, quand ils viennent à être malades, ils veulent absolument que leurs médecins les guerissent.

(2) Translate into French:—

The sultry heat of summer always brings with it to the idler and the man of leisure a longing for the leafy shade and the green luxuriance of the country. It is pleasant to exchange the din of the city, the bustle of the crowd, and the gossip of society for the silence of the hamlet, the seclusion of the grove, and the chatter of the woodland brook. It was a feeling of this kind that prompted me, during my residence in the north of France, to spend a month at Auteuil, in the neighbourhood of Paris.

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(3) Give some cases in which the verb should precede its nominative.

(4) Write some sentences to show the various ways in which "about" can be translated into French.

(5) Why *plus d'une vérité* rather than *plus qu'une vérité*? What is the difference in use between *plus* and *davantage*?

(6) Write in full the perfect subjunctive of *s'en aller*, *s'asseoir*, and the preterite of *revenir* and *vivre*.

(7) Translate:—(*a*) It is a mere trifle; (*b*) Take a seat; (*c*) Where did you get this coat made? (*d*) I almost lost my train; (*e*) You are a good shot.

Euclid.

BOOKS I.-IV.

A.

(1) The two triangles ABC, DEF have the angles at A and B respectively equal to the angles at D and E; if also the side AC be equal to the side DF, show that the triangles are equal in all respects.

(2) To a given straight line apply a parallelogram equal in area to a given parallelogram and having one of its angles equal to a given angle.

(3) If a straight line be divided equally and unequally, the sum of the squares on the unequal parts is equal to twice the sum of the squares on half the line and on the line between the point of section.

(4) If the opposite angles of a quadrilateral be together equal to two right angles the angular points of the quadrilateral lie on a circle.

(5) If two chords of a circle intersect in a point inside the circle, the rectangle contained by the segments of the one shall be equal to the rectangle contained by the segments of the other.

(6) Construct an isosceles triangle having each of the angles at the base double of the third angle.

B.

(7) ABC is a right-angled isosceles triangle having the angle at A a right angle; BC is produced to E so that CE is equal to BA, and BA is produced to D so that AD is equal to BC. If AE, DE be joined, show that AE equals ED.

(8) Bisect a triangle by a straight line drawn from a given point in one of its sides.

(9) Any two points P, Q are taken on the circumference of the semi-circle described on AB and AP, AQ are joined. From AQ a part AP′ equal to AP is cut off; show that the perpendicular to AB drawn through P′ cuts AP produced in a point Q′ such that AQ′ equals AQ.

(10) Show that the straight line joining the centres of the inscribed and circumscribed circles of a triangle having each of the angles at the base double of the vertical angle subtends at either end of the base an angle equal to half the vertical angle.

Algebra.

(*Pass Paper.*)

(1) Find the highest common factor of x^4+2x^2+9 and x^3+5x^2+9x+9.

(2) Resolve into factors $x^2-y^2+2(bx-ay)-(a^2-b^2)$.

Show that

$$\frac{a(b+c)}{(a-b)(a-c)}+\frac{b(c+a)}{(b-c)(b-a)}+\frac{c(a+b)}{(c-a)(c-b)}+1=0.$$

(3) Simplify:—

(i.) $\frac{1}{3(x-1)^2}+\frac{5}{9(x-1)}+\frac{4}{9(x+2)}$;

(ii.) $\frac{3(a+1)(a^2+2a)-(2a+3)(a^2+3a+2)}{(2a-1)a^2-a(a^2+a+3)}$.

(4) Solve the equations:—

(i) $\frac{1}{3}\left\{17-2(5x-11)\right\}=4\frac{1}{2}-\frac{19x}{4}$;

(ii) $\frac{x+3}{y+2}=\frac{x+5}{2y+7}=\frac{3}{8}$;

(iii) $2(x+2)^2+3(x+1)+1=0$;

(iv) $x^2+y^2=130$. $x^2+xy=42$.

(5) A rectangular field has an area of $2\frac{1}{8}$ acres; a square allotment, whose side is equal to one-half the width of the field, is taken from one corner; if the remaining portion be fifteen-sixteenths of the area of the field, find the dimensions of the field.

(6) Prove that $(a^m)^n=a^{mn}$ when m and n are positive integers.

Simplify $\sqrt{(a^{-\frac{1}{2}}b^3c^{-\frac{3}{2}})}\div\sqrt[3]{(a^{\frac{1}{2}}b^4c^{-1})}$.

(7) Simplify the expression

$$\{3\sqrt{2-\sqrt{3}}-\sqrt{6+\sqrt{2}}\}\{3\sqrt{2-\sqrt{3}}+\sqrt{6-\sqrt{2}}\};$$

and calculate its value to three decimal places.

Solve the equation $\sqrt{\frac{x}{2}}+\sqrt{x-4}=4$.

(8) Find the condition that the roots of the quadratic equation $ax^2+bx+c=0$ may be real and unequal.

If α and β be the roots of the equation $2x(x-3)+k(2x-3)=0$, show that $\alpha-\beta$ cannot be less than 3, whatever real value be given to k.

(9) Show that if

$a^2-ab+b^2 : c^2-cd+d^2=ab : cd$,

then either $a:b=c:d$ or $a:b=d:c$.

Answers.

(1) x^2+2x+3. (2) $(x+y+a+b)(x-y-a+b)$.

(3) (i.) $\frac{x^2}{(x-1)^2(x+2)}$; (ii.) $\frac{a+2}{a}$. (4) (i.) $x=-6$;

(ii.) $x=-\frac{17}{8}$, $y=\frac{1}{3}$; (iii.) $x=-\frac{3}{2}$ or -4;

(iv.) $x=\pm3$, $\pm7\sqrt{2}$, $y=\pm11$, $\mp4\sqrt{2}$.

(5) 220 yds., 55 yds. (6) $a-b$.

(7) $5(2-\sqrt{3})$; 1·339; $x=8$.

JUNIOR OXFORD LOCAL EXAMINATION, JULY, 1901.

Revision Tests.—No. 2.

Arithmetic.

(*Pass Paper.*)

(1) A gentleman owns, in a certain street, a number of houses, the total frontage of which amounts to 1 furlong, 29 poles, 1 yard, 2 feet, 6 inches; if the average frontage of each house be 8 yards, 2 feet, how many houses are there?

(2) Divide £645 5s. 9d. by $4\frac{1}{8}$.

(3) Simplify $(\frac{1}{3}+\frac{3}{5}+\frac{2}{7})\times(12\frac{1}{11}\frac{5}{6}-10\frac{1}{6}\frac{3}{4})$.

(4) Find the value of $\frac{3}{10}$ of £6 13s. 9d. − $\frac{3}{7}$ of 5 guineas + $\frac{2}{5}$ of $1\frac{2}{3}$ of 4s. $10\frac{1}{2}$d., and reduce the result to the decimal of £4.

(5) Divide the sum of 102·1625, 11·16 and 48·3715 by the difference between 3·00552 and 2·9917.

(6) If 5 cwt. 3 qrs. 18 lbs. 8 ozs. of lead cost £24 5s. 10d., what will be the cost of 12 cwt. 2 qrs. 14 lbs. 6 ozs.?

(7) By selling goods at a certain price I gain 9s. 4d. per cwt.; find, by Practice, my gain on 8 tons 15 cwt. 27 lbs.

(8) A sum of £5,000 is loaned at Simple Interest as follows: £1,400 at 3 per cent., £1,200 at 4 per cent., and the remainder at 5 per cent.; what rate per cent. does the whole sum bring in?

(9) A builder undertakes to build a house in six months; he employs 65 men for $4\frac{1}{2}$ months and then finds that he has done $\frac{3}{16}$ths of the work. How many men must he employ for the remaining time to complete the house in the agreed 6 months?

Answers.—(1) 44. (2) £156 8s. 8d. (3) $3\frac{1}{3}$. (4) 13s. $4\frac{1}{2}$d.; ·1671875. (5) 11,700. (6) £51 16s. 9d. (7) £81 15s. 7d. (8) $4\frac{1}{2}$ per cent. (9) 75.

English Grammar.

ANALYSIS AND SYNTAX.

(1) Analyse:—

Meanwhile the tide, what there was of it, was ebbing fast, and the captain admitted that if we did not get across these shoals within half an hour we should certainly lie fast upon them till next morning at least, and how much longer no one could tell.

(2) Explain and give examples of:—Indirect object, verb of incomplete predication, absolute phrase, adverbial objective.

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(3) Explain the mistakes in the following sentences :—
Whom is it you are sending ?
Every man does not believe in dreams.
John's book is quite different to yours.
It is everybody's duty to look after themselves.
Allow you and I to do it.

(4) When is the infinitive mood without *to* used in English ?

(5) Give illustrations of the various ways in which a noun clause can be used.

(6) State clearly the rules regarding the use of *shall* and *will* in making statements.

English History, 1399-1603.

1558-1603 (*Special period*).

Five Questions only to be attempted, of which one must be Q. 6.

(1) State clearly the respective claims of Elizabeth Tudor and Mary Stuart to the English throne, and show how the rivalry affected the first ten years of Elizabeth's reign.

(2) Describe the circumnavigation of the globe by Francis Drake.

(3) Name and briefly characterise (*a*) four prominent politicians at Elizabeth's Court ; (*b*) four great writers of her day ; (*c*) four distinguished foreigners contemporary with her who had close dealings with England.

(4) Name in order some of the more important of the suitors for Elizabeth's hand, and explain carefully why she preferred to remain a "Virgin Queen."

(5) Give an account of the war between England and Spain, from the defeat of the Armada to the death of Elizabeth.

(6) Where are the following places, and how do they come into the history of this period ?—*Azores, Brill, Durham, Edinburgh, Gravelines, Havre, Meta Incognita, Smerwick, Tilbury, Ulster.*

Henry V.

(1) Explain the allusions in the following :—

His vanities
Were but the out-side of the Roman Brutus.

Whose state so many had the managing,
That they lost France.

Which Salique land the French unjustly gloze
To be the realm of France.

This day shall gentle his condition.

(2) Explain with reference to the context :—

Their mastiffs are of unmatchable courage.

The mercy, that was quick in us but late,
By your own counsel is suppressed and killed.

The fuel is gone that maintained that fire.

A city on the inconstant billows dancing.

The horsemen sit like fixed candlesticks.

(3) Explain the following words and phrases :—

Affiance, chantries, gimmal, I will have forty moys, mountain-squire, incorporate league.

(4) Give as fully as you can the substance of Henry's reply to the argument that the King is responsible for all who die in battle.

(5) Write characters of Fluellen, the Dauphin, Pistol and Exeter.

Poems of England.

(1) Describe the movement of the Ode on the Duke of Wellington, explaining the construction of the poem, and the appropriateness of the rhythm to the matter.

(2) Give an account of the political lessons contained in "Love thou thy land."

(3) In what terms does Scott allude to Fox ?

(4) What are the two voices which have been the "chosen music of liberty" ? In what connection does Wordsworth refer to them ?

(5) Give the substance of Tennyson's remonstrance with the House of Lords in 1852.

(6) What is Shakespeare's prediction with regard to James I. ?

Geography.

ENGLAND AND WALES, BRITISH SOUTH AFRICA, FRANCE.

(1) Draw a map of England and Wales, marking the position of the following :—York, Cardiff, Rochester, Plymouth, Birmingham, Peterborough, Cotswold Hills, Scafell, Lake Bala. Mark also the maritime counties of Wales, and the rivers of Yorkshire.

(2) In what parts of England are the following found :—Iron, coal, lead, salt, copper ? What are the chief imports of England from Canada ?

(3) Where and of what importance or interest are the following :—Dartmoor, Rochdale, Crewe, Nottingham, Bethesda, Honiton, Harrogate, Burton, Middlesborough ?

(4) On an outline map of South Africa, insert :—Cape Town, Port Elizabeth, Kimberley, Durban, Pretoria, Johannesburg, Lorenzo Marques, Delagoa Bay, Zanzibar. Trace also the course of the Orange River and its tributaries.

(5) What does the term British South Africa comprise ? Give a short account of the industrial state of the country.

(6) Write a short description of the climate, productions, and inland communications of Cape Colony.

(7) On an outline map of France insert the chief mountains and rivers. Indicate the most thickly-populated districts ; draw the 44th parallel of latitude, and the 4th meridian of longitude.

(8) Describe the climate and rainfall of France. Compare it with England in this respect.

(9) Of what importance are—Toulon, St. Etienne, Dunkirk, Belfort, Creuzot, Lille ? Name the foreign possessions of France.

French.

(1) Translate into French :—
(*a*) It is difficult to please everybody.
(*b*) I am grieved (*desolé*) not to be able to help you.
(*c*) I saw her arriving in a cab.
(*d*) He writes better than you think.

(2) Translate into French :—

There is a story of a French duke who had nothing left in the world except a box which his ancestor had hid in a chimney. In this box were some diamonds and a pearl necklace which the duke hoped to sell for three hundred thousand francs. Unfortunately it turned out (*se trouver*) that the jewels were false, although his grandmother had long worn them at Court.

(3) Form adverbs in *-ment* with the adjectives *nouveau, profond, impuni, aveugle, gentil, absolu, présent, diligent,* and *bref.*

(4) How would you express in French the plural of the following ?—*Le sous-officier ; le chou-fleur ; Robespierre ; le mal de tête.*

(5) Give the present indicative, the future indicative, and perfect indicative of *vivre, vendre, s'asseoir* and *s'en aller.*

(6) Translate into English :—

Il avait erré pendant quarante-deux jours à travers l'Angleterre, successivement caché dans huit asiles différents ; quarante-cinq personnes de toute condition, dont les noms sont connus, et sans doute plusieurs autres qu'on ignore, avaient su qui il était et où il était. Pas une ne trahit, même par une indiscrétion, le secret de sa présence ou de ses mouvements. Un dévouement sincère donne au plus simples de l'habilité et aux plus faibles de la vertu.

(7) For those only who offer "Chouans et Bleus." (The page references are to Hachette's edition.)

(i.) Translate (*a*) p. 27, ll. 8-20 ; (*b*) p. 97, ll. 8-14 ; and (*c*) p. 145, ll. 1-11.

(ii.) Write notes on *elle tombait juste, à franc étrier ; il y a fort à parier que . . . . ; le Chouan sut à quoi s'en tenir.*

(8) For those only who offer "La Tulipe Noire." (Page references to Hachette's edition.)

(i.) Translate (*a*) p. 13, ll. 3-11 ; (*b*) p. 147, ll. 1-20 ; (*c*) p. 222, ll. 18-26.

(ii.) Write notes on *Romantisme ; je me suis bien gardé de : à febrousse-poil ; toujours aux prises avec.*

Euclid.

BOOKS I. AND II.

(1) Define a plane surface, a plane figure and a circle.
Write out the Postulates.

(2) The angles at the base of an isosceles triangle are equal,

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and if the equal sides be produced the angles on the other side of the base are equal.

(3) If a straight line fall across two parallel straight lines it shall make the alternate angles equal, the exterior angle equal to the interior and opposite angle on the same side of the line and the two interior angles on the same side together equal to two right angles.

(4) In the triangle AXB the sum of the squares on AX, XB is equal to the square on AB; show that the angle AXB is a right angle.

(5) If a straight line be divided into any two parts the square on the whole line is equal to the sum of the rectangles contained by the whole line and each of the parts.

(6) Divide a straight line into two parts such that the square on one part may be equal to the rectangle contained by the whole line and the other part.

(7) ABCD is a parallelogram in which the side AB equals twice the side AD and E is the middle point of CD; show that AE, BE are the bisectors of the angles at A and B.

(8) ABC is an isosceles triangle having the side AB equal to the side AC; with centre B and radius BC a circle is described cutting AB and AC in D and E; if DE cuts BC produced in F show that CE equals CF.

(9) If two triangles equal in area are on the same base and on opposite sides of it, the straight line joining their vertices is bisected by their common base, produced if necessary.

(10) AB is a straight line divided at C so that the rectangle contained by AB, BC equals the square on AC; if AD is equal to BC, show that the rectangle contained by AC, CD is equal to the square on AD.

Algebra.

(*Pass Paper.*)

(1) (i.) If $x = 3, y = -2, z = 5$, find the value of
$$y\sqrt{z^2-4y^2} + 5y^2(3xz-2y^3) - 16x^2y^2.$$
(ii.) Add together $6a^3 - (5a^2b - b^3)$, $7a^2b - (3ab^2 - 2b^3)$, $5ab^2 - (4a^3 + b^3)$.

(2) Multiply $x^2+2xy+4y^2-3x+6y+9$ by $x-2y+3$.

(3) What is meant by the greatest common measure of two or more algebraical expressions?
Show that if a divides A and B, it will also divide mA$+n$B.
Find the G.C.M. of $x^4-2x^3+6x^2-18x-27$ and x^4-10x^2+9.

(4) How many yards of carpet a inches wide will be required to cover a room x feet long and y feet wide?
What will be the cost if b yards of the carpet cost s shillings?

(5) Simplify

(i.) $$\frac{5}{x^2+x-6} - \frac{1}{x^2-3x+2} + \frac{2}{x^2+2x-3};$$

(ii.) $$\frac{x-y}{x(x-y) + \dfrac{2xy}{1 + \dfrac{x+y}{x-y}}}$$

(6) Resolve into factors $(ax+bc)(by-ca)(cz+ab)$, where $x = a+b+c$, $y = a+b-c$ and $z = b-c-a$; thence find its square root.

(7) Solve the equations

(i.) $$\frac{2x-2}{3} - \frac{4x-9}{5} = \frac{7-2x}{12};$$

(ii.) $$\begin{aligned}(b+c)x + (b-c)y &= 2ab\\ (c+a)x + (c-a)y &= 2ac.\end{aligned}$$

(8) A man has a certain sum of money in his possession; if he were to spend 18s. 9d. and then one-fifth of the remainder he would have left one-twentieth of the original sum. How much money does he possess?

(9) Show that $(ab+2bc+ca)^2 + (b-c)^2(bc-a^2) = bc(2a+b+c)^2$.

Answers.

(1) (i.) 638; (ii.) $2(a^3+a^2b+ab^2+b^3)$. (2) $x^3-8y^3+27+18xy$. (3) x^2-2x-3. (4) $\frac{4xy}{a}$ yds.; $\frac{4xys}{ab}$ shillings. (5) (i.) $\frac{6}{x^2+2x-3}$; (ii.) $\frac{1}{x+y}$. (6) $(a+b)(b-c)(c+a)$. (7) (i.) $x = -16\frac{1}{2}$; (ii.) $x=y=a$. (8) £1.

PRELIMINARY OXFORD LOCAL EXAMINATION, JULY, 1901.

Revision Tests.—No. 2.

Arithmetic.

(1) Divide £163 16s. $0\frac{3}{4}$d. by 43.

(2) How many tons, cwt., &c., are there in 656,874 ounces?

(3) Find the least common multiple of 8, 12, 16, 30, 42 and 48.

(4) Simplify $\frac{3}{5}+\frac{2}{3}$ of $\{\frac{5}{8}+\frac{3}{10}\}$.

(5) Two-thirds of a sum of money are equal to $\frac{9}{11}$ of 6s. 5d.; find the sum of money.

(6) Multiply 6·315 by ·00268.

(7) A regiment of 800 soldiers has enough provisions to last it for 25 days; how long will the provisions last if the regiment is joined by 200 more soldiers?

(8) How much will have to be paid in taxes on £350 at the rate of 3s. $7\frac{1}{2}$d. in the £?

(9) Find the simple interest on £4,780 for $8\frac{1}{3}$ years at $2\frac{1}{4}$ per cent. per annum.

Answers.

(1) £3 16s. $2\frac{1}{4}$d. (2) 18 tons, 6 cwt., 2 qr., 6 lb., 10 oz. (3) 1,680. (4) $1\frac{13}{60}$. (5) 7s. $10\frac{1}{2}$d. (6) ·0169242. (7) 20 days. (8) £63 8s. 9d. (9) £896 5s.

English History, 1399-1603.

1509-1603.

Five Questions only to be attempted, of which one must be Q. 6.

(1) Sketch the career of Cardinal Wolsey.

(2) Write an account of the Northern Risings of 1536 and 1569.

(3) Mention half-a-dozen men who played prominent parts in the reigns of Edward VI. and Mary, and add brief notes on each person.

(4) Tell the story of the coming and going of the Spanish Armada.

(5) Which do you admire more—Queen Elizabeth or Mary Queen of Scots? Add why.

(6) State the position and historical importance (during this period) of the following places:—*Flodden, Fotheringay, Guinegatte, Kinsale, Langside, Leith, Muscovy, Solway Moss, Virginia, Zutphen.*

English Grammar.

UNINFLECTED WORDS AND PARAPHRASING.

(1) For what purposes are prepositions used? Give examples.

(2) What parts of speech are used to join sentences together?

(3) Parse the words in italics in the following passage:—

Hast thou *no* voice, *O* Peak,
That standest *high above* all?
I am the voice of the Peak;
I roar *and* rave, *for* I fall.

(4) Show by examples how it would be possible to do without adverbs.

(5) Write in your own words the meaning of the following lines:—

A thousand summers ere the time of Christ,
From out his ancient city came a Seer
Whom one that loved and honoured him, and yet
Was no disciple, richly garbed, but worn
From wasteful living, followed—in his hand
A scroll of verse—till that old man before
A cavern whence an affluent fountain poured
From darkness into daylight, turned and spoke.

Poems of England.

(XI.-XVI., XXV.-XXVIII., XXXII.-end).

(1) Who were Riou, Russell, Brunswick, Sir John Moore, Elgin, Outram, Lawrence, Lord Thomas Howard?

(2) Explain the force of the epithets in:—The meteor flag of England, crowned and mitred tyranny, the distant and random gun, Castile's black fleet, Mendip's sunless caves, bleak Hampstead's swarthy moor, Malvern's lovely height, great gray slope of men, dark-muffled Russian crowd, one sheet of living snow.

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(3) Explain the allusions in :—No cross of bronze, as firm as Sparta's king, the murderous mole, that famed Picard field, where Blake and mighty Nelson fell, the Prince of all the land led them on, Till o'er the hills her eagles flew beyond the Pyrenaean pines.

(4) What are the qualities which Tennyson chooses for special praise in the Duke of Wellington?

(5) Describe some typical achievements of English heroes in the various parts of the world alluded to in "England's Dead."

Geography.

ENGLAND AND FRANCE.

(1) Draw a map of the Thames basin, and insert:—A tributary on the left bank, the Chiltern Hills, the North Downs, London, Windsor, Oxford, Gravesend, Aldershot, Epsom.

(2) Give the positions of the chief plains of England. What industries are carried on in them?

(3) What do you know of interest about—Leeds, Newcastle, Douglas, Buxton, Hull, Rugby?

(4) On an outline map of France trace the course of the Loire, draw the principal mountain ranges, and mark the positions of Marseilles, Calais, Orleans, St. Etienne, Nantes.

(5) In what parts of France are the following made or found: —Coal, grapes, cotton, pottery, silk, salt?

(6) What are the ports of communication between England and France? In what parts of the world are French colonies or possessions near our own?

French.

(1) Translate into French :—

(*a*) I have just read that book. It was very interesting.

(*b*) I came back from Paris on the 1st of June.

(*c*) Give that little boy a few nuts. I have no orange for him.

(*d*) Wait a little and I will come with you.

(2) Give the various ways of forming, in French, (*a*) the plural of nouns, and (*b*) adverbs of manner. Illustrate by examples.

(3) Write in full the preterite of *être*, *manger* and *suivre*; and the perfect indicative of *ouvrir*.

(4) Translate into English the following passages from "Seulette." (The page references are to Hachette's edition.)

(*a*) p. 50, ll. 17-23; (*b*) p. 67, ll. 9-16; and (*c*) p. 82, ll. 6-13.

(5) Answer the following questions on words contained in the above passages :—

Parse the words "*le*" and "*lui*" in l. 18 of 4 (*a*).

Write in the masculine singular "*nous restâmes seules*," and give the past participle of "*couvraient*" 4 (*b*).

What is the difference between *baisser* and *baiser*?

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD ***will be submitted to the contributor before publication, so that the criticism and reply may appear together.***

History in Schools.

MR. W. M. CHILDS, in his extremely interesting lecture on the Teaching of History in Schools,—an abridgment of which appeared in the April number of your paper,—maintains that the detailed study of special periods of history should give way to a general course of universal history. "The ideal of this" (*i.e.*, the school) "stage," he says, "is to impart connected views of national and of universal history." Specialisation is to be left to maturer years. This proposal is too revolutionary—"My criticism is not so much that something *more* should be attempted, but that something *different* should be attempted,"—to be accepted without the most careful examination.

Mr. Childs complains that "the thing lacking in our history teaching as a whole is a connected view." The want of connection in our history teaching prevents the formation of the supremely important habit "of viewing things as wholes." The complaint is by no means without justification; but the remedy proposed appears far too violent. The truth is that in history, as in all other branches of knowledge, complete unification is impossible: we must be content with a compromise. The scrappiness of our history teaching is to be remedied not by substituting general for particular courses of study, but by a closer correlation of the special periods studied. As a *reductio ad absurdum* of Mr. Childs' argument, would it not be as reasonable to apply it to language as to history? If we are to teach "the history of mankind" to schoolboys, because "in history there is nothing isolated," and because this study would encourage the habit "of viewing things as wholes," why should we not prefer, let us say, a course of study in the Indo-European languages to the study of our native tongue?

The main argument, however, upon which Mr. Childs bases his conclusion is this: "Universal history should precede national history, just as national history should precede local history. . . . The point is that, *rationally*, general history precedes the other kind, as the idea of a house precedes that of a chamber." Now, surely, in teaching history we should follow not the logical but the natural order. Mr. Childs appears to identify these. "It is a reversal of the *natural* order to specialise, as we so often attempt to do in youth, and leave to maturity the connected view. The young mind craves rapid movement; it hearkens to fewer wayside appeals; it delights in broad historical effects." It may be true to say that, logically, universal precedes national history, and national precedes local history; but the natural order is the exact reverse of this. It is natural that we should take an interest in local individuals and occurrences, before we concern ourselves with our national history; and that we should take an interest in the history of our own nation, before we trouble about the history of other nations. Moreover, the young mind delights not in historical generalities, but in those particular and personal details which the unfortunate teacher of universal history would be compelled to discard as irrelevant. It is for these reasons that we teach history, in its initial stage, by means of stories.

It is true that all knowledge proceeds, in a sense, from the general to the particular, and from the whole to the part; that is to say, all knowledge is at first general and undefined, and developes by degrees accuracy of detail. This is true in history, as in all other branches of knowledge. The "story stage" should give a general glimpse of the heroes and great events of our national history; this knowledge should, gradually, be enlarged and defined; each stage should be more highly specialised than the one before it. Mr. Childs' application of these principles appears to me to be in accordance neither with reason nor with experience.

In one respect Mr. Childs' argument seems to be inconsistent. "If we are to teach history as a whole," he says, "the whole must come before the part. In a lesson on Westminster Abbey we do not begin with the west front or the Poet's Corner, we begin with the Abbey in the mass. It may seem audacious and almost unpatriotic to postpone English history to general history, but not a little English history should have been picked up in the story stage." Now, the story stage is not general; it does not deal with history in the mass, but with its details. On what grounds, then, does Mr. Childs place it first in his "rational" scheme of history teaching?

All teachers of history know the humanising influence of the specialised course which Mr. Childs condemns. Most will doubt, I think, whether its place in the school curriculum can be filled adequately by a course of universal history.

I have confined my criticism entirely to the general part of Mr. Childs' article. His practical hints on method are alto-

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gether admirable, and must rouse a feeling of regret in the minds of those who were debarred from hearing his lecture.

The Grammar School, Ernest S. Davies.
Cheltenham,
April 9th, 1901.

Mr. Davies will, I fear, regard me as obstinate in error, for I am unshaken by his criticisms. Yet I am glad to see that on certain points we are in agreement.

I advocated stories for the child, connected views for boys and girls, and specialisation for the advanced student. Other systems, as I said, may yield good results, and by all means let us have elasticity and variety of treatment; but to my classification, as an indication of general principles, I adhere. Mr. Davies is so far with me that he admits that my complaint of the "scrappiness" of so much history teaching in schools "is by no means without justification." His remedy would be "a closer correlation of the special periods studied." The precise value of such a remedy is hardly clear without a specific instance of its application. I continue to prefer a revision of the curriculum in history on the definite lines suggested in my paper. I may be wrong, but my proposals will survive a delusive analogy from languages.

Mr. Davies criticises my order (for boys and girls) of general, national and local history. It certainly seems to me the best, natural as well as logical; but provided he reaches my goal, I should never demur to his setting out *viâ* Cheltenham. He thinks the teacher of general history would be confined to bloodless generalities, which shows that my suggestion that the teacher might make his lessons "centre round great personalities" was not sufficiently emphatic. Mr. Davies values the "humanising influence" of the study of special periods "which Mr. Childs condemned." I value it also; but I said and say, with experience behind me, that with boys and girls you may specialise to the extravagant injury of their knowledge of general history. Nor is there any inconsistency in urging that history should be approached through stories if it be remembered that what you teach and how you teach it must always be governed by whom you have to teach. For little children, but not for boys and girls, it may be best to put the part before the whole.

I have to thank Mr. Davies for the very cordial tone of his demands. His dissent from my views does not, I am encouraged to think, equal the volume of his agreement. I am persuaded that he, no more than I, can regard as satisfactory a system of teaching which so often leaves vast spaces in human history a blank to the pupil, which gives no sense of proportion because it gives no background, which supplies no framework into which may be fitted the acquisitions of later life.

The College, Reading, W. M. Childs.
April 29th, 1901.

Aims and Methods of Science Teaching.

The letter of my colleague, Mr. Abbott, to the April number of The School World has had an unexpected effect. It has "drawn" Prof. Armstrong, and has enabled your readers to judge of his attitude more clearly.

If it were not for the conspicuous position claimed and taken by Prof. Armstrong during the last few years it would not be necessary to pursue the controversy, but, as a result of the vigorous "agitation" (to which Prof. Tilden referred at the same meeting where Prof. Armstrong criticised Mr. Abbott), he has come to be regarded by many as our one safe guide in matters of science teaching, and, as a result, he has been selected by Government to serve on the Consultative Committee. We are bound, therefore, to take careful notice of the views expressed by such a public man, and when he finds it necessary to express these views with violent, scornful epithets ("shallow fraud," "twaddle," &c., &c.), we assume he is speaking from earnest conviction based upon experience.

I venture, therefore, to appeal through you to the Professor and ask him to present us with a dissertation of another kind. As a man of science, accustomed to make contributions to scientific societies, he will understand what I mean when I ask him to put on one side the style of public "exhortation to unbelievers" and present us with a scientific account of his researches and results in the Teaching of Children in this branch of Nature Study. He will, of course, supply the proper data, age and attainments of pupils, time spent on the lessons, mode of instruction and *verified results*.

Many of those who read The School World are accustomed to read such scientific papers from teachers, in English or foreign journals, and they expect to find guidance of the same kind from a prominent leader. For such purposes the devices of sensational journalism—such as

R-E-S-E-A-R-C-H !
Weigh ! Weigh ! ! Weigh ! ! !
The Duchess ! The Duchess ! !—

are beside the mark, and, indeed, are a disturbance to thought, although delightfully picturesque and effective in a popular address.

I ask for a contribution from Prof. Armstrong on Nature Study, because his address in London and his letter to you appear to be inconsistent. He tells us that he is not at variance with Prof. Miall, and yet he denounces Mr. Abbott's work, along (p. 195 of your May issue) with that of most other teachers, as "sheer pretence," "empty twaddle." Now I will not insult Prof. Armstrong by assuming that he has written such scathing words without undertaking thorough investigation, at first hand, by experiment and research, of the work of children in Nature Study. I only beg him to let us have the result of his work in dispassionate, scientific form; we shall then know exactly what he means by "true Nature Study" and shall be able to distinguish that from "empty twaddle."

If I am not asking too much, I think teachers will wish to hear something more from Prof. Armstrong on another subject of still greater importance:—the value of psychology as a branch of professional study. Your readers will bear in mind that the Consultative Committee on which Prof. Armstrong sits has been charged by Government with the formation of a Register; hence the action of that Committee will have a decisive influence upon professional training. I take it that Prof. Armstrong, in opposition to the general opinion of other eminent men, is going to use his influence against the recognition of psychology as bearing upon the science of education. Psychology to him is synonymous with "cant;" teachers would agree with his view if they "would tell the honest truth," &c. Now I think teachers are entitled to ask Prof. Armstrong, in his *rôle* as a teacher, to give us a scientific paper, embodying the result of those researches into psychology which enable him to pronounce this verdict upon its lack of value in relation to the study of education. He urges teachers "to eschew psychology until they have had a little sound, thorough elementary training in quantitative experimental work." This appears obscure, since it ignores those important fields of Experimental Psychology and of Child Study (by quantitative methods) which are so widely made use of to-day.

I desire expressly to challenge Prof. Armstrong to give teachers, to whom he proffers advice so dogmatically, a brief, simple account of his own researches on which these opinions are based. We are quite ready to sit at his feet if he will treat us as competent to listen to a scientific exposition, but we cannot accept as a substitute the *de haut en bas* kind of writing which he sent to your May number in reply to Mr. Abbott. It is not a question of *Teufelsdröch* or Huxley or the *Enchiridion*, but

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of scientific results based on experience. Teachers have been trying, in humble fashion, to lay a sound basis for the study of education. What has Prof. Armstrong to say, *from his own work as a teacher*, as to the attention which he has paid to the scientific study of education and the results (negative or other) accruing from his studies in that field? We cannot believe that a scientific man of eminence after working in the field of Chemistry has entered the field of Education without thoroughly preparing himself for the work of a teacher by the study of Education. Let us, then, have the result of these researches in the study of Education which have enabled him in so authoritative a fashion to depreciate the value of psychology.

J. J. FINDLAY.

Cardiff,
May 3rd, 1901.

As I helped to organise the Nature Study teaching at the Cardiff Intermediate School for Boys, where Mr. Abbott is Science Master, perhaps I may be permitted to add my quota to the controversy. As I gather, Professor Armstrong would permit Nature Study to be taught in schools so far as this term can be made to spell out the word R-e-s-e-a-r-c-h. Now, so far as the observation of phenomena which take place in Nature, by boys from ten to twelve years old, under the guidance of a teacher, can be called "research," I yield to Professor Armstrong's view.

But Nature Study, I take it, implies more than this, and therein lies its efficacy and its claim to be admitted into a school time-table. The teacher of this branch of knowledge—or rather of these branches, for Nature Study comprises work in zoology, botany, geology, physiography and astronomy—must have three ends in view—viz., to cultivate a *systematic* power of observation in his pupils, to lead them to take an interest in Nature and its wonders, and lastly, to train both eye and hand in observing, recording and manipulating the objects which they are studying.

At Cardiff we had a school-garden which afforded us an infinite variety of material, such as worms, snails, insect larvæ, &c., whose habitat, development and anatomy we studied. We learnt something of the composition, organic and inorganic, of the soil, and by judicious sowing and growing we learnt how plants develop different mechansims for climbing and for the distribution of their seeds. We noted the effects of the seasons on our garden and on the surrounding country. A small neighbouring stream was kind enough to rise on a watershed, to flow through a valley, then through a plain, and finally to form a delta! We made a pond and kept tadpoles and other things in it. These, alas! perished, and we were forced to watch their development in a pool in a neighbouring quarry, whither we made many excursions.

All this was very well, and you may call it "research" or what you will; but I must lay great stress on the fact that, after all this interesting observation, we methodically wrote descriptions of what we had seen, not little essays, but scientific descriptions, and we made inartistic but *accurate* drawings of what we saw. I shall not forget a boy's disgust when he received no marks for an exquisitely coloured leaf of a pear-tree which he brought me. It was very pretty, but the veins ran the wrong way. When Spring came, and with it many flowers, we wrote descriptions of them according to Lindley, and we drew their floral diagrams. But we did little weighing, and rough work at that. We peeled a potato, and found that it lost weight through evaporation, and we burnt some soil to show that it contained organic matter; but that was all. Now all this cannot be called research, spell it as you will. Some of it may be, but the important part—the fact that makes the difference to a boy's other and afterwork—is the training in observation, in handling, in recording what he has seen, and the acquirement of a scientific habit.

W. G. HARTOG.

High School, Liverpool Institute,
May 8th.

The Colloquial Teaching of French.

As my lecture on the Teaching of French (to which Mr. Stallworthy directs attention in your May number) was only partially reported, perhaps you will allow me to summarise briefly my propositions.

(1) I believe that Modern Languages are taught with less success in England than in Scotland, and than in Germany, Holland, Belgium and Austria.

(2) I believe that the first object at which we ought to aim is the supply of good Englishmen trained abroad to teach Modern Languages and Literature.

(3) For this purpose it is advisable that numerous travelling scholarships should be provided by the Universities, municipalities and other public bodies.

(4) That an Honours' School for Modern Languages be established at Oxford, and that it should teach Modern French Literature.

(5) That the English parent should take as much interest in the studies of his children as does the Scottish parent, and that English fathers and mothers should teach their children to believe in the dignity of learning.

(6) That the classical masters in English schools should bring themselves to believe that modern languages and literature are a branch of learning, and that half the boys and girls who are pretending to learn classics are totally unfit to understand them.

H. A. STRONG.

University College, Liverpool,
April 29th.

IN connection with this subject, may I be allowed to say a few words in answer to Mr. Stallworthy's letter which appeared in your May number?

At a time when changes seem to be looming in the teaching of modern languages in schools, owing to decisions likely to be taken in the near future by high authorities, it is perhaps not unimportant to keep the question well in sight. Considered solely from an educational point of view, it is, I venture to think, well worthy of our closest consideration.

The purpose of my address to teachers, at the Winter Meeting of the College of Preceptors, was not so much to supply a complete curriculum of French studies in our schools as to try to show how the moral value of those studies could be enhanced, and how French conversation might so be carried on in higher forms, that students should derive from it both intellectual and moral benefit: by lifting them gradually into a new world of words and a higher train of thought; by pointing out and discriminating between actions, facts and motives; by beginning early to make them think about phases of life around them which, though perhaps a trifle less interesting than football or cricket, perhaps less easy to picture and express than the common objects of daily use, lie nevertheless at the root of the building up of a youth into an honest, respectable, useful member of society. I always feel that pupils are not often enough given opportunities to really think for themselves, and that their powers of cerebration are but too frequently entirely disregarded. The blending of instruction and education is, I believe, the twin aim of all teachers; and I doubt whether the training of the mind is not the first and foremost. Was it not so in the schools of old, in the days when the mania for examinations was not raging? And was not then instruction subservient to education, a means to an end? Nowadays it would seem as if

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examinations were of paramount importance, and that on the gaining of a certificate, by whatever means, is set a higher value than on the psychologic state of mind in which the pupils leave school to face the hard facts and trials of life.

Prof. Strong, who had preceded me, had so well depicted the needs of pupils in the lower forms, and how provision should be made for these needs, that I thought it needless to dwell longer upon this stage. On that score I was, like everybody else, thoroughly at one with him. I took the pupil when emerging from the lower forms, well able to pronounce, fairly acquainted with general accidence, and stocked with a fair vocabulary, and I endeavoured to carry out Prof. Strong's scheme "in earnest," that is, by beginning to direct the pupil's thoughts towards a higher standard, whilst using the subordinate, though useful means of French conversation. I thought I could thus, by interesting steps, teach him more French and induce higher thoughts. As a means I thought well suited to that end, I proposed Lafontaine's Fables.

This might perhaps explain why Mr. Stallworthy thought, or was inclined to think, I had ignored the beginners. Not so, indeed; the beginners have all my sympathies. To ignore the beginners would be to so delay any possible good work in the middle and upper classes as to materially impair or nullify that work. Like Prof. Strong, I have, in previous addresses, always and especially insisted upon pupils being, from the very first, taught by superior teachers. To my mind, there is nothing like laying a sound foundation for any building that you wish to stand hereafter steadfast and lasting. Even a deficiency in the prevailing conditions of my school work could not have forced me to a compromise when advocating the teaching of colloquial French before a body of teachers. No, the beginners should, above all, be well taught, if they are to derive any benefit from colloquial teaching. But, as Mr. Stallworthy well expresses it, the *successful* colloquial teaching to classes of average pupils of a spoken foreign language is, under the best of conditions, a difficult task. There is at present, under the ordinary conditions of examinations, hardly an escape, except perhaps that of giving up the job. Headmasters are, in many cases, too apt to look to, and judge by, examinations, and the success, somehow, of their pupils therein. It is the life and soul of the many, and too often summed up in the all-powerful symbols £ *s. d.* Languages weigh, as yet, too little in the scale of education for more than a fleeting thought being given to their value save as examination subjects. My aim was to bring their educational value, as instruments to moral incentives, more prominently before the teacher's mind, in the hope that, by predisposing the body, I might perchance succeed in reaching the head.

And yet, weighing all that has been said within the last few months by headmasters, assistant-masters, persons in high places and sensible parents, there seems to be now but little incitement needed to accord to modern languages their due place in the curriculum both of schools and examinations. Was, then, all this a mere phantasmagoria of empty words, or will it become shortly a reality? We may perchance know before long.

No other study is, I venture to think, better suited to the training of the intellect and of the mind than literature; none more apt to develop those qualities which neither mathematics nor science can touch. Abroad, the vernacular is studied thoroughly. That study is taken up from the first, and never given up. In England, I make so bold as to say that, of all the subjects that are taken up, English remains, for a long, long period, the most neglected, the least known. To make up for this deficiency, it is necessary to fall back upon other kindred subjects, and Greek, Latin, French, German, are reckoned upon to make up for the failure in the study of the vernacular. But Greek is too exclusive, Latin too much of a drill. What, then, remains, if modern languages are neglected, to supply that smack of moral science and philosophical teaching which the ancients provided before? Where are the classes of *Rhétorique* and *Philosophie* of the Continent? Hitherto nothing has seemed worth doing with modern languages; hitherto they have proved a long, tedious, thankless, because barren, study to teachers and taught alike. Why should they remain so, if they can be used to better, to higher purposes?

And for this purpose, I repeat, I advocated Lafontaine's Fables. They embody the simple child's story of Prof. Strong, from which you can diverge at any moment, and spontaneously, into the common objects of life present to our eyes, tangible to our minds, as well as into more abstract ideas, requiring deeper thoughts and discernment, combining memory of words and building up of new conceptions. Their ethics can hardly fail to be understood by, and sink into the mind of, the young pupil, and will remain the guides of his more mature age, while their remembrance will ever be a pleasure to dwell upon. They are attractive in every way, touching as they do upon all points that have furnished themes to poets and thinkers. In a word, they are, one and all, true pictures, and thorough object-lessons. Grammar, conversation *ad infinitum*, reading, recitation, dictation, translation, paraphrasing, essay writing, combine to make of them a varied and complete study of the French language, as well as an excellent course of ethics. Even philology need not be omitted: comparative philology is too helpful to be neglected.

I advocated these Fables especially for a *colloquial purpose*, not as an end to the study of French. As I suggested to apply them, I do not think they require a clever man to expound them. They are too simple, too natural. Point is deduced from point; actions quickly follow and unmask motives; schemes are foreshadowed; intrigues unwound and brought to an issue. Any teacher, with a good knowledge of French, a little activity of mind, a little imagination and a spontaneity of ideas, can make them interesting, instructive and educative. And thus might the aim of colloquial teaching be attained: the talking of French in the school-room, not quite courier-fashion—though, as Prof. Strong says, it has its good points—but by giving expression to well pondered and digested ideas in fairly idiomatic French; not by rote, but by means of intelligent thought.

But I quite agree with Mr. Stallworthy that colloquial teaching by such, or any other means, does not build up the whole fabric of the linguistic work of masters and pupils. It only helps to build up a part, a very essential part—the colloquial part. I have made that part, linguistically and morally, as beneficial to the pupil as possible. There remains another, equally important—the reading of literary masterpieces of many kinds, in prose and verse, and the rendering of the vernacular into the foreign language. For it is one thing to express or write one's own ideas in one's own words and way, and quite another to express or write, clearly and concisely, another man's ideas, so that they shall not deteriorate or be defaced in translation. In the one case we have free scope to apply our knowledge and fancy as best suits us; in the other, we are tied down tightly by a train of thought from which we must take, and to which we must add, nothing.

Colloquial French should go hand in hand with the reading of French literary works and the translation of English into French. Out of five French lessons a week, which I would consider a fair time allotted to a modern language in schools which look upon it as a serious study, I would give, in the upper classes, two to colloquial teaching, one to reading, one to translation of English into French, and one to essay writing. In the middle classes, three to colloquial, one to reading, one to

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translation; while, in the lower forms, the whole time should be devoted to pronunciation, grammar, and, through conversation, the building up of a large and useful vocabulary.

I trust Mr. Stallworthy will hold with me that thus could be satisfied, in its fullest scope, the linguistic training of a schoolboy in all its theoretical and practical desiderata. Add to this the fact that, in the middle and upper classes, the lessons would, in the main, be carried on in the foreign tongue, and there is little doubt that pupils might then emerge from school well able to do credit to themselves whenever their knowledge of French should be put to the test.

S. BARLET.

Mercers' School,
Holborn, E.C.

Experimental Determination of the Maximum Density of Water.

IN several text-books of Physics an experiment for the determination of the temperature of the maximum density of water is described, in which a coil of narrow lead-piping, terminating above in a piece of thermometer tubing, is filled with water, and the changes in volume observed by noting the movement of the water meniscus in the glass tubing.

It would appear that the conditions involved in this method have not received due consideration, since the co-efficient of cubical expansion of lead (0·0000885) is, for temperatures between 0° and 10°C., greater than that of water. A lowering of temperature, within the range 0° to 10°C., will therefore cause an *apparent* gradual increase in the volume of the water.

In at least one recent description of this method attention is drawn to this discrepancy, and a theoretical method for eliminating the expansion of the lead is suggested. This object might be attained by drawing two curves to the same scale, one recording the actual observations and the other giving simply the cubical expansion of the lead; from these two curves, a third one may be obtained by difference, which, when plotted out, would indicate the volume changes in the water alone. But this procedure would not appeal so clearly to a student as would an experiment involving direct observations only.

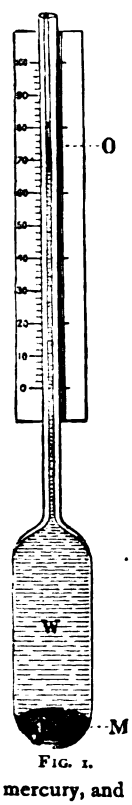

FIG. 1.

A satisfactory method is described in Müller-Pouillet's "Lehrbuch" (and is also mentioned in Newth's "Chemical Experiments"), in which the entire apparatus is of glass (Fig 1); the bulb is filled partly with mercury (M) and partly with boiled distilled water (W). On cooling the apparatus the contraction of the mercury will tend to *increase* the internal capacity of the space filled with water, while the contraction of the glass will have the opposite tendency. These contrary effects will neutralise each other when the volume of mercury = $\frac{1}{7}$ the total volume of the bulb, since the co-efficient of expansion of mercury (0·00018) is about seven times that of glass (0·000026).

The diagram represents a cylindrical bulb (10 cms. × 1·5) terminating in a capillary tube (0·5 mm. bore). O represents a short column of oil which serves to prevent absorption of air and evaporation. A paper millimetre scale is attached to the capillary tube. In order to ensure uniformity of temperature, it is advisable to support the apparatus in a wide tube containing mercury, and in which the thermometer is immersed; this wide tube is supported in a beaker of water to which ice is gradually added.

The following readings have been obtained with this arrangement:—

Temperature.	Scale reading.	Temperature.	Scale reading.
9° C. ...	38·5 mms.	4° C. ...	20·1 mms.
8° C. ...	32·5 ,,	3·8° C. ...	20·3 ,,
7° C. ...	26·8 ,,	3·5° C. ...	20·5 ,,
6° C. ...	22·5 ,,	3° C. ...	20·8 ,,
5° C. ...	21·0 ,,	2° C. ...	21·7 ,,
4·1° C. ...	20·3 ,,	1° C. ...	23·5 ,,

H. E. HADLEY.

School of Science,
Kidderminster.

What is the Duty of an Assistant-Master?

I CANNOT refrain from commenting upon Mr. Hurst's letter in your May issue. I am sure a great many assistant-masters will, like myself, feel aggrieved at the tone adopted by your correspondent. His letter contains a very uncalled-for sneer at a profession already too much maligned. I am confident that many assistants are actuated by no such sordid motives as Mr. Hurst would impute to a whole class.

It is difficult to understand what your correspondent means by "folly at the Universities and elsewhere;" but surely, whatever this veiled hint may mean, the same remark would apply to headmasters, since their number is almost entirely recruited from the list of assistants; unless Mr. Hurst would argue that mere promotion to a headmastership changes a man's character and miraculously broadens his interests.

In my opinion, the chief difficulty lies in the necessity which often confronts a headmaster of striking a balance between the rights of his assistant and the demands of parents, which are unfortunately in many cases conflicting, but of which the assistant may hear nothing.

A. K. SHAPCOTE.

County College, Hereford,
May 6th.

Cheltenham Grammar School.

ALL interested in secondary education would do well to direct their attention to certain changes in comtemplation at Cheltenham Grammar School. In the belief that some of your readers will welcome a brief statement of the facts, I venture to crave a little of your valuable space.

Some twenty years ago the school, formerly mustering nearly 300 boys, had fallen in numbers to less than 40. A new scheme was approved by the Charity Commissioners in 1881, and under it the present headmaster, Mr. J. Style, formerly second master of Manchester Grammar School, was appointed. The curriculum was set forth in the scheme, and the school became what is now generally termed a "second-grade" school; provision was made for the teaching of modern subjects; Greek was made an extra, but Latin was retained as part of the course.

Mr. Style's appointment was followed by an immediate and continuous increase in numbers till about the year 1893, when an unstable maximum of 150 boys was reached; there have been fluctuations, as in all schools, and the present numbers are 115 about. New buildings were erected in 1889, crippling the endowment income by £180 a year; and in 1894 the "School of Science," a town institution which was moribund and in financial straits, was "amalgamated" with the Grammar School, with the result that, owing to the inadequacy of Government and County Council grants—partly due to changes of policy by the South Kensington authorities—a slight annual deficit in the

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accounts of the joint schools has ensued. The Grammar School, however, as the separate accounts show, is in no real financial danger. In 1900 a new scheme was promoted by the County and Town Councils to attach a "technical school" to the Grammar School; and under the provisions of this scheme the County Council, so long as they pay £1,000 a year to the school to be spent on technical subjects, nominate five governors. Nearly that amount was already allocated to the science school, so that it is only a small increase to the funds of the joint schools. The endowment of the Grammar School is at present upwards of £1,500 a year; the School of Science has none, being dependent entirely on grants received from South Kensington and local authorities.

The net result of the new scheme is to give the County Council the virtual control of the whole concern, and this is demonstrated by the fact that they are demanding, before they will proceed, the resignation or dismissal of the present headmaster for alleged hostility to their "scheme." There is a very strong feeling in the town that Mr. Style is not being treated fairly, or at least that he is entitled, after nineteen years' very successful (this is admitted by all) work, to be given a trial as headmaster under the new scheme.

Cheltenham is not at all an industrial town, and scarcely a single manufactory is carried on. Since the above affords a test of County Council management, it is especially interesting at the present time owing to the New Education Bill.

I shall be very glad to send any information in my power to those interesting themselves in the matter.

H. COKER SMITH (an Old Boy).

Llanrhystyd, Aberystwyth,
May 10th.

PRIZE COMPETITION.

No 14.—Answers to Geography Questions.

HIGHER GRADE.

A HIGH standard was attained by the majority of competitors, and the questions were answered with a degree of thoroughness that left little to be desired. The question dealing with isotherms showed that this point was sometimes imperfectly grasped, and the change of day involved in the circumnavigation of the globe was not satisfactorily explained in a single case. Question 10, on the subterranean heat of the earth, was attempted by one competitor only.

The papers of the following competitors are very highly commended:—Bride Hayes, Ethel Lee, Gertrude Urthell, Mabel Wilkinson, Kathleen Lee, Daisy Maclean, Helen Benbow, Marion Hobbs. The first prize is awarded to

BRIDE HAYES,
The Convent,
Holt Hill,
Birkenhead.

And the second prize to

ETHEL LEE,
36, Dyke Road,
Brighton.

LOWER GRADE.

All the papers were creditably done. There are one or two points that call for attention. A watershed is not necessarily "a mountain-range separating two rivers;" as the prize-winner points out, the elevation of the water-shed above the surrounding land is sometimes very slight, *e.g.*, the Valdai Hills. *Horse-latitudes* and *doldrums* are not interchangeable terms. The commonly accepted theory of the Gulf Stream's effect on our climate is a fallacy. Finally, the language spoken in Switzerland is not Swiss.

The best answers were received from:—Helen McNabb, Florence Adams, Bernice Cox, Mary Gilmartin, Margaret Norris-Jones, Winnie Matheson, Daisy Giles, Violet Reddrop. The first prize is awarded to

HELEN MCNABB,
Ursuline Convent,
The Downs,
Wimbledon.

And the second prize to

FLORENCE ADAMS,
Greenway House School,
Tiverton.

No. 15.—Short Stories of School Life.

It is a common complaint of schoolmasters and schoolmistresses that most of the popular stories concerned with school life show a want of knowledge, on the part of the writers, of the peculiar relations between teacher and taught, and the conditions under which they live and work. There is much justification for the criticism. The novelist generally has only the misty recollections of his own school days to guide him. Acting schoolmasters and schoolmistresses, however, certainly possess minute knowledge of the many aspects of school work and school politics, even if their powers of expression are more limited.

If teachers could be persuaded to describe some real or imaginary incident of school life in the form of a short story, it should be possible to secure light sketches free from ridiculous improbabilities and reflecting with a minimum of distortion some scenes or incidents experienced or suggested by teachers or pupils. In the hope of securing at least an approximation to this ideal, we offer two prizes, *one of two guineas* and *one of one guinea*, for the two best short stories in which the characters or incidents are connected with school life. The stories may be imaginary or based upon fact, but verisimilitude, as well as literary style, will be taken into consideration in judging their merits. The stories should be written on one side of the paper only, and should reach this office on or before the last day of June, accompanied by a coupon from the May or June number. The length must not exceed 1,500 words.

The award of the Editors is to be final, and will be announced in the August issue, when at least one of the prize stories will be published.

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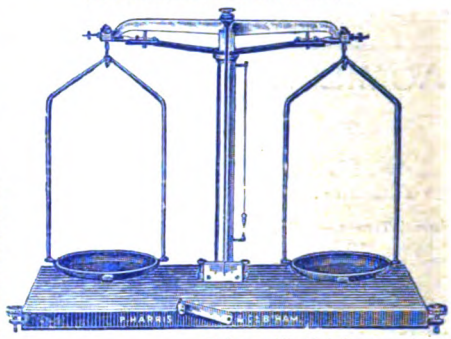

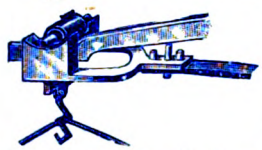

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The School World

A Monthly Magazine of Educational Work and Progress.

NO. 31. JULY, 1901. SIXPENCE.

SUGGESTIONS TOWARDS SEASONAL NATURAL HISTORY IN SCHOOLS.

By J. ARTHUR THOMSON, M.A.
Regius Professor of Natural History in the University of Aberdeen.

II.—Summer.

IN our previous study we expressed our conviction that the most effective order for a school course of natural history is one which follows the seasons. For this is an order which justifies itself both to the intelligence and to the emotions as natural; it harmonises with the out-of-door interests of the pupils; it facilitates their co-operation, and it suggests interesting links between the natural history studies and others, such as physics and astronomy, literature and custom-lore. It seems to us the most natural and inviting mode of arrangement which has been suggested, and we strongly recommend that it should be tried, especially for junior classes and in those schools where but little time is devoted to the subject. In neither of these cases is it feasible, even if desirable, to arrange a systematic course of study on more strictly logical lines. For children, at least, a seasonal order of study is natural, and probably more logical than it may seem to the careless critic. Let us, then, suggest a few of the many relevant summer studies, taking for our key-note the fact that for most living creatures in north-temperate countries summer is the time of maximum output and income of energy, when the fires of life burn their brightest and are afterwards built up for another season. It is for plant and animal the time of intensest life. The relation of this to the physical facts which determine summer should, of course, be made plain.

(1) MODES OF LOCOMOTION.—We might well begin with a lesson or two on the different modes of locomotion among animals, for there is more movement now than at any other season, much of the summer sunshine being speedily re-expressed in life in motion. If we make sure, by reading, for instance, Prof. McKendrick's little book on "Life in Motion, or Muscle and Nerve," that we are clear as to the elementary physiology of the subject, we may pass profitably to books like those of Marey and Pettigrew in the International Science Series, the chapter on flight in Headley's "Structure and Life of Birds" (Macmillan, 1895), or the article "Flight" in Newton's "Dictionary of Birds." A large rectangular glass shade, fitted movably on a wooden base with arrangements for ventilation, may be cheaply made, and will be very useful for showing the class the movements of small mammals and birds, grass snake and lizard, frog and toad, snail and slug, spider and butterfly, and so on. An aquarium with *flat* sides is indispensable for studying the movements of newts, fishes, water-beetles, water-boatmen, crayfishes, leeches, starfishes, and so on. Since Socrates troubled himself to inquire with some precision into the muscular achievement of a flea, we need not fear that we are wasting time if we ask a class to linger for several days over the marvellous variety of locomotor activity among animals. And after all we shall have to confess that the way of the bird in the air and the serpent on the rock is too wonderful for even twentieth century science to pass them by as solved problems. For detailed study and demonstration the various modes of flight in birds and the motion of the wings in ordinary flight may be strongly recommended, especially in country schools. An easier lesson may be arranged by giving the pupils, or groups of pupils, some little fish, like the stickleback or the minnow, which will not be hampered by temporary confinement in small vessels. Where rectangular glass cases are deemed too expensive, pudding dishes or milk basins are probably better than the common glass globes, whose curvature distorts the image perplexingly. And in connection with animal locomotion, it would be appropriate to show examples of plants that move some of their parts—the sundew, the rock-rose, the musk, the climbing and twining plants, and so on.

(2) EARTHWORMS.—Darwin's immortal work on "The Formation of Vegetable Mould through the Action of Worms" will supply sufficient hints for a lesson or series of lessons. Vigorous earthworms are everywhere procurable, and they may be watched for a while in a glass vessel with some loamy soil at the foot and plenty of loose moist moss above. Some of the pupils should count the number of holes on several square yards of lawn or the like; others should collect the castings and

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weigh them; the little heaps of stones or twigs that often protect the entrances to the burrows should be demonstrated. Good instances of castings, &c., may be put aside in boxes for revisal, and improved from year to year. Thus a collection of a score of rowan-leaf midribs arranged round the mouth of one hole makes an interesting permanent exhibit. This is such an easy lesson that we need not expand further; the pupils should be got to see for themselves how the earthworms, by their burrowing, bruising, and burying work, have contributed more to human welfare than the horse or the cow. We are of course aware that the story of the earthworm may now be found in many books for use in school; our point is simply that it should be made objective. The only difficulty in this case, where the material is everywhere abundant, is to find *time*, for we take the will for granted.

It would be interesting that the class should read what Gilbert White wrote regarding the earthworm in 1777, more than a hundred years before Darwin's book was published. With a specimen of queen-termite to start from, the story of her children may be told, and their work compared with that of the earthworms. (See Henry Drummond's "Tropical Africa.")

(3) ANTS AND BEES.—From comparatively simple cases of animal industry, like that of earthworms, the class might go on to study ants and bees. In the country there are often fine ant-hills near at hand, but the making of an artificial formicarium, such as that seen at the Paris Exhibition and elsewhere, is well worth attempting. Charles Janet, who is a master in the art of ant-rearing, recommends a block of some porous substance like plaster or terra cotta or bath brick, in part of which chambers and galleries should be hollowed out. At one end of the block there must be a little reservoir of water, which soaks through, but so gradually that the further end is kept quite dry by evaporation. The block should be fixed to a firm base, *e.g.*, a strong glass plate. Some of the chambers should be open to observation either through a horizontal glass lid or through a vertical glass side, but this must have a dark shade when the ants are not being observed. No earth should be used; honey may be used as food; the two things to be most avoided are great drought and much moisture. Janet points out that the ants are not inclined to leave their home when they are comfortably housed; but if excursions are greatly dreaded, strict confinement can be readily secured. Anyone desirous of starting a thoroughly effective formicarium, and willing to give time and trouble to it, should try to see Janet's paper in the *Mémoires* of the Société Zoologique de France for 1897, vol. x., pp. 302-323, 1 pl. But even if no permanent formicarium can be arranged, it may be possible, by temporary imprisonment of a small colony or by field observations, to make more real to a class the behaviour of the little people, as described, for instance, by the Rev. Farren White in "Ants and their Ways," or by Lord Avebury in his "Ants, Bees and Wasps."

Similarly, the year's life of a bee-hive should be sketched, and it is not difficult to obtain from the dealers permanent preparations showing the life-history of the bee and the different kinds of comb. Attention should be given to the work of wild bees, *e.g.*, the humble-bee (*Bombus*), the mason-bee (*Osmia*), who builds in the hollow bramble-stems, or the leaf-cutter (*Megachile*), who lines her nest with neatly-cut fractions of rose-leaves. Some of these nests and those of wasps should be secured for the school museum. The whole story of the making of the hornet's nest has been told in great detail by Janet, and makes a fascinating study.

(4) INTER-RELATIONS.—The study of bees naturally suggests their *rôle* in the economy of nature as pollinators of flowers, and the opportunity should not be lost of showing how zoology and botany are dovetailed; for, after all, their separation is merely a matter of convenience, adaptive to our limited intelligence. It would be interesting in the school botanic garden, for there are such things, or in the fields around, to get the pupils to make some observations, *e.g.*, on the different ways of robbing various kinds of flowers, on short-cut methods which are sometimes resorted to, and on the so-called "law of constancy"—that a bee keeps for a certain time to the same kind of blossom (as Aristotle said so long ago). Instead of dogmatically teaching that bees are lured by the flags of colour, it would be much more educative to arrange, if possible, a few experiments, as suggested by Plateau, to verify the importance of colour, or to show that the odour of the flowers counts for much.

There is no risk that Darwin's "Cats and Clover" story will be forgotten, but it is important to make the pupils feel that this classic instance of inter-relations is only one in a thousand, and that they can find out others. No greater gain can result from all our "Nature-Study" in schools than a familiarity with this central biological fact—the correlation of organisms in the web of life; and summer is especially the season for its study.

Of a summer morning we sometimes see hundreds of spider-webs glistening in the sun, and they give us a pictorial suggestion of the intricacy of the threads in the web of life—to be seen more and more as our eyes grow clearer. "Or, is not the face of nature like the surface of a gentle stream, where hundreds of dimpling circles touch and influence one another in an infinite complexity of action and reaction beyond the ken of the wisest?"

I may be allowed to refer to the chapter on "The Web of Life" in my "Study of Animal Life" (4th ed., Murray, 1901), and to Professor Geddes' "Chapters on Modern Botany." For a relaxation hour, a story from the "Jungle Books," or Seton Thompson's "Wild Animals I have known," may be selected to clinch the truth. To the familiar outcry that there is no time for such nonsense, I have only to reply that if time were found for what in a century will be regarded as

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commonplaces of psychological or educational common-sense, it would be realised how much time is wasted in attempts at "brain-stretching" during inelastic phases.

In illustration of inter-relations there should be collections of galls, demonstrations of defensive adaptations in plants and the work of injurious insects, exhibitions of insectivorous plants, and a permanent case or two showing "nutritive chains," *e.g.*, bird. fish, crustacean, and so on, so as to suggest the circulation of matter from lower to higher forms.

(5) ANIMAL PRODUCTS.—Here, as it seems to us, would be the appropriate place for studying (*a*) the products which remain as the results of the industry of animals—from the honey of bees to the edible bird's nest of the sea-swift (*Collocalia*), (*b*) the useful products which are stored by animals in their bodies—from cochineal to whale blubber, (*c*) the useful products made by animals, as external shells or as parts of their bodies—from coral to ivory. Especially in towns, it is often possible to enlist the kindly help of manufacturers and to obtain various animal products in different states on to the forms which they have in the market. The story of silk, of mother-of-pearl, of tortoise shell, of isinglass, and so on through the long list, may furnish material for many an interesting lesson, and our point is that the study gains in educational value when it comes in as part of a reasonable and simple scheme which considers summer as the climax of animal activity.

(6) The whole subject of the industries of animals (see Houssay's book in the Contemporary Science Series) is fascinating, and often quaintly suggestive of parallels with human occupations. It is enough to mention the hundred and one different modes of hunting, the pastoral habits of a few species of ants (*e.g.*, *Lasius niger*), the agricultural work of others, all the ways of making shelters and laying up stores. A fine lesson may be given if one is fortunate enough to find the true water-spider (*Argyroneta aquatica*), which fills its dome-shaped sub-aquatic web with air entangled at the surface, and thus in some measure suggests the diving-bell or the balloon. In dealing with these and other "anticipations of man by nature," care must be taken to keep as far as possible to objective description, so that there need not be subsequent unlearning.

If time and space allowed, my six suggestions might be increased to sixty. Further hints will be found in Gilbert White's "Natural History of Selborne," in Professor Miall's "Round the Year" (Macmillan), in Mrs. Brightwen's "Rambles with Nature Students" (Rel. Tract Society), in my little "Natural History of the Year" (Melrose). It need hardly be said that summer is the best time for excursions, and that it is much to be desired that this custom, of which one sees much more on the Continent, took firmer hold in Britain. For of many a problem it may be said: *Solvitur ambulando.*

YACHTING FOR SCHOOLMASTERS.

By C. F. ABDY WILLIAMS, M.A.
Bradfield College.

THERE can scarcely be a more enjoyable or healthier change for the schoolmaster, wearied with the term's work, than a few weeks of "roughing it" at sea; and the south coast of England, with its numerous harbours, offers special facilities for enjoying this form of holiday. We venture to offer a few hints to those who have no experience of the delights of sailing and managing small yachts, in the hope that they may be induced to try their hand at this fascinating pursuit.

In the first place, he who sails on the south coast in August must be prepared for rough and smooth water, wet and dry weather, heat and cold, calms and gales. The constant variation of conditions is not only one of the chief charms, but a great element of health and vigour, besides which it makes so great a contrast to the ordinary shore life that the novelty alone is worth experiencing. Having ordered that the yacht is to be ready by a given date, we go down to Southampton or Lymington, or Poole, or wherever she is; spend a day or two in getting things shipshape below, seeing that all gear is right, putting provisions, water and liquors on board, oil or spirits for the stove, and the thousand and one necessaries for a month afloat; and then make an early start to get the benefit of the first tide that will serve us. There is no seven o'clock school, but there will probably be a four, or five, or six o'clock tide to catch, and no one who has not experienced it can tell the delight of these early morning sails. The barometer is carefully studied over night, and before starting, consultations take place on the probable "strength of the wind outside" (which, by the way, is nearly always less than in harbour, except when a gale is blowing), we get our anchor, hoist our sails, and sail gently out, in company with picturesque colliers and barges, the crews of which are always most polite if one wants help or advice.

Once clear of the harbour we can shape our course, and get breakfast under way, for which we have acquired an appetite unknown to 'longshoremen. Perhaps it "comes on to blow," or the sea rises and wets us—but what do we care! We put on our oilies and sou'-westers, shorten sail, and make up our mind to enjoy everything that comes. Or perhaps a dead calm, with great heat, is to be our lot for the day. This is certainly more trying than rain or wind: but never mind, we are getting a healthy, if uncomfortable sun bath, and when night comes on we shall certainly get a little breeze to help us to our next port. It is important in these small yachts never to leave port if there are indications of a gale coming on; and if the weather becomes threatening after we have started, it is best to make for the nearest port as quickly as possible. To enjoy a

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sailing cruise we must be absolutely independent of times and places, and just go where the wind and tide will allow us to go most comfortably.

The question will probably be asked, "How is one to set about getting a cruise, and what are the expenses likely to be?"

The crux is how to procure the yacht: for the initial expense, whether of purchase or hire, is undoubtedly great. If this is overcome, the subsequent expenses are far less than those of any other holiday in which a great deal of ground is travelled over. Many small yachts are owned and sailed by two or three friends, who share expenses, and are registered as "part owners" of their yachts. A vessel of from six to twelve tons, capable of accommodating three to four amateurs, and competent, if properly handled, to sail from London to Penzance during the six weeks' summer holidays, would cost from £100 to £200 to purchase second-hand. If selected by an experienced man, who would have her properly tested for soundness, see that she is not too old, and that all her gear is in good condition, such a vessel ought to last at least ten summers. There would, of course, be occasionally some gear to renew: fitting out, dismantling and hauling up for the winter would cost, say, £20 a year, or less if the owners did a good deal of the work themselves. The cost of the first year would therefore be about £20, *plus* the cost of purchase, say £180 in all; this divided amongst four part-owners, would work out at £45 each. The expenses of succeeding years would probably work out at about $£\frac{20}{4} = £5$ each, and a man will scarcely in any other way obtain lodging for four to six weeks, and the means of travelling hundreds of miles, for £5 a year. To this must be added the cost of food, drink and fuel, and an occasional "tip" for services rendered. But when one does one's own cooking and washing up it is wonderful how cheaply one can live.

We are speaking of a yacht managed entirely by amateurs, and for cruising only, not racing. This is, to our mind, by far the most enjoyable form of the sport; for when "paid hands" are employed, expenses mount up and troubles begin. Happy is the yachtsman who has never had any trouble with paid hands. No doubt the amateur blunders, loses some gear occasionally, gets wrong with his tides, and tumbles into various messes: but at any rate he gets plenty of fun for his money, laughs and gets laughed at, and is not under the thraldom of men who consider that they are paid high wages merely to keep the yacht looking smart in harbour, and who always have some excellent reasons for never moving away from their favourite anchorage. It would be obviously unfair to an excellent body of men to say that they were all of this kind, but there is no doubt that a very large number take advantage of the inexperience of amateurs, and that the account of Captain Goyles in Mr. Jerome's "Three men on the Bummell" is scarcely overdrawn.

But it is not necessary to purchase a yacht in order to obtain a yachting holiday, for many owners like to let their yachts for part of the summer.

To hire a yacht, application should be made to some of the many agents who advertise every week in the *Field* and the yachting papers, stating the kind of vessel required, the number of berths, the duration of the cruise, where the vessel is to be taken over by the hirer, &c., and proper legal documents must be drawn up and agreed to by the contracting parties.

The cost of hire of a yacht of from 20 to 30 tons, with four to six berths and a crew of two or three paid hands, should be £1 per ton per lunar month. It should be expressly stipulated in the agreement that the crew are to victual themselves, and the hirer will have to arrange about whether he pays the insurance. He will of course have to pay harbour dues, and pilotage and towage if required; but these need hardly amount to anything with care. The chief difficulty the inexperienced hirer will meet with is that he may be often detained in harbour by the skipper on various excuses, such as want of water, contrary wind or bad weather, and will lose a lot of valuable time in this way. We once hired a yacht of between 20 and 30 tons for a fortnight, on the understanding that we were to go across the Channel to Boulogne. We had lovely weather; but various reasons were given why we could not leave Dover Harbour from day to day. At last we insisted on making a start. "You won't like it, sir, it's too rough." "But," we said, "we have seen from the top of Shakespeare's Cliff this morning that there is a flat calm right across to France." "Yes, sir, but there is more sea than you think, and the ladies will be sea-sick." It so happened that the ladies of the party were experienced yachtswomen—a fact well known to the skipper. "Well, sir, *I* never wish to detain the yacht, and if you insist I will start; but don't blame me if you find it too rough for you." We started, towed the yacht in a broiling sun about a mile out to sea, were becalmed all day and all night, and finally reached Boulogne after twenty-eight hours of drifting on a sea like a billiard-table. This happened many years ago; but the nature of the paid hand has not changed, for only last year a casual acquaintance remarked to me that he had had plenty of sailing in former years when he himself worked a 5-tonner, but now that he had a 20-tonner, with paid hands, he scarcely got any sailing at all. Of course they are not all like this; many excellent and hard-working men are found, but the inexperienced yachtsman must be on his guard. Unfortunately he will find it almost impossible to tell whether it is really necessary to remain at anchor, or whether he is being humbugged.

It may be possible to hire a yacht without paid hands, but owners are naturally a little shy of trusting their vessels to unknown and possibly unskilled amateurs, and we have no experience of its being done.

The cost of hiring a yacht of 7 to 10 tons, with one paid hand, during August is high on the

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Solent. We have been asked as much as £7 a week, but in the West of England—Devonshire, for instance—it would be less. The best way to hear of a small boat of this kind would be to advertise in the local papers, and a private arrangement could be made without the intervention of an agent, whose fees would thus be saved.

But there is another way in which the would-be amateur yachtsman can acquire experience in handling boats, and perhaps he would be well advised to put off attempting a down-channel sail until he has acquired skill and weather wisdom by a season in the Solent. There is no better place for a beginner. There are plenty of harbours, the anchorage, on mud, is nearly everywhere excellent, and a fortnight or a month can easily be spent in exploring the many beautiful creeks and rivers. Full sailing directions for this paradise of amateur yachtsmen will be found in the latest edition of A. and C. Black's "Guide to the Isle of Wight."

Half decked and very safe centreboard boats of 4 to 5 tons can often be hired at about £3 a week, without a man, from the boatbuilders on the West Quay, Southampton, Stevens Brothers, or Pickett. They have no sleeping accommodation, but a little cooking can be done under the fore-deck, and by spreading a sail over the cockpit an occasional night may be spent at anchor, in fine weather, in one of the pretty creeks without great discomfort. The boats are specially adapted to these inland waters, and if they get ashore on any of the numerous mud-banks, the keel can be lifted, and they float off at once. A dingey, collapsible if possible, and some means of carrying water, must be included in the hire. A riding-light must be placed in the rigging every night when the boat is away from her usual moorings. Lodgings should be obtained at Lymington or Southampton, as it would be impossible to spend many nights on board if the weather were bad. We strongly recommend the perusal of a little book on "Sailing" by E. F. Knight, published by George Bell and Sons at 2s., before and during the first season's sail; and perhaps the following sketch of a month's cruise may be of some assistance in giving an idea of what is possible for the second season's cruise, after the amateur has gained a little experience.

Some years ago the writer bought a 12-ton cutter at a moderate price in the Thames, and after having some necessary repairs done, he, with his wife, an undergraduate friend, and an old barge hand, left Brightlingsea, in Essex, on August 26th. There was a settled easterly breeze, which took us gently down channel by easy stages. We anchored on successive nights at Dover, Newhaven, Lymington, Weymouth, and, being becalmed, were a night out in getting to Salcombe. Here we dismissed our bargee, who had proved to be utterly incompetent, and taking another amateur on board, we sailed about the coast near Salcombe till driven in by a gale, which lasted three days. Our two amateurs then had to leave, so we engaged an ex-bluejacket, and sailed to Exmouth, where we rode out a south-east gale, which was so strong as to damage the railway near Dawlish. We then visited Plymouth, Fowey, Dartmouth, Weymouth, and after losing our dingey in the race off St. Alban's Head, we reached Southampton on September 26th, where we laid the yacht up for the winter at a cost of £5 for hauling up, storing gear, and launching the following season. As we were unable to get amateurs for the whole time, we were obliged to engage a hand for three out of the four weeks, but an amateur crew could easily have managed the whole cruise, and our bargee was more of a hindrance than a help.

Perhaps the following rough epitome of our experience of expenses may be of use:

Purchase of a 3-ton centreboard cutter at Southampton, £25.

New sails, painting, berthon dingey, bedding, pantry and cooking gear, about £25.

Second season, all expenses, including assistance in bad weather, came to £13. In this yacht we sailed as far as Salcombe, back to Southampton, next season to Burnham-on-Crouch, where we sold the yacht.

Purchase and repairs of 12-ton cutter in the Thames, about £130.

Second season, fitting out, new dingey, payment of one hand for season, about £30.

In this yacht, besides the cruise described, we visited Falmouth, the Channel Islands, Cherbourg and Havre, during succeeding summers.

Purchase of 5-ton half-decked cutter at Plymouth, with dingey, for fishing and day sailing only, £39 10s.

Fitting out, moorings, new gear, &c., about £16. The above expenses do not include food.

If a man is prepared to keep his weather eye open, to run no unnecessary risks in bad weather, to keep his head in an emergency, and finally, to make up his mind to enjoy hard work and simple fare, he can have such pleasure out of amateur yachting as nothing else can give him.

THE ARRANGEMENT OF WALKING TOURS.

By A. G. MUNRO, B.A.

Assistant-Master of the City of London School.
Author of "Rochester and Chatham, with Pen and Camera."

BEFORE offering suggestions for the arrangement of a walking tour, let us first come to some agreement as to the main objects of this form of recreation.

Change—physical and mental—is the first ideal I propose to follow in the present article, a complete variety from the ordinary life, an excursus into the realms of Nature—animate and inanimate—as it exists anywhere outside the class-room and the school precincts generally.

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One great advantage of a walking-tour is that it brings one into touch with objects impossible to bicycle, railway, motor-car and every other form of locomotion. The summits of Cader Idris and Carn Tual are inaccessible to both motor-car and railway train, and the cycle is unavailable on the coast-line of Cornwall. On the other hand, all the delectable haunts—castles, abbeys, cathedrals, great cities—that steam and electricity penetrate are reached with ease by the pedestrian.

The second ideal of the article is healthful exercise, a genial physical stimulus, a fitness of body—in short, the exact opposite of what is implied by the word "stale."

Foremost, of course, we have to deal with organisation. A walking tour must be organised. But here are the elements of danger—it must not be over-organised. The main outline should be settled and a midway objective, if possible, fixed upon, but a rigid mileage per diem and rigid hours for meals are religiously to be avoided. The man who insists on doing everything up to time-table form is apt to become a veritable demon on a walking tour, and, even if the tour is started with an agreement to do so many miles in such and such a time, take lunch at such and such an hour, the first ten miles "hammer, hammer, hammer on the hard high road," if the weather be hot, is pretty safe to break the contract.

"H'm, h'm, is that all? come on, dinner's down for 1.30," was the enthusiastic remark a companion—a headmaster, too—made a few years ago, when, after a two hours' journey, we both, for the first time, saw the breakers round the rocks of the Lizard. By the way, my companion's strong point as a Head was organisation! Of course, I cast no slur upon common-sense arrangements for each day as the tour progresses. For instance, the pedestrian who means to get a bed in the lowlands of either Speyside or Deeside must not linger romancing over the cold, stern, rugged solitude of Loch Aan and McDhui until sunset, neither must he be found at this time feasting on the bilberries and cranberries so abundant on Cairngorm's slopes—a favourite occupation of the writer—that is, of course, unless he is prepared for a couch on the heather, or a shakedown in a remote shepherd's hut. All that is insisted upon is an adaptability of both mileage and meals to the wants of the passing hour. As to the midway objective, if the walking tour covers, in the main, lonely districts, it might be well to make the midway halt in some popular resort, whither, if need be, a portmanteau and change of raiment may be sent on beforehand.

In connection with organisation, we have to consider the composition of the walking party. This point involves either the success or the failure of the entire venture. One jarring human note vibrates with special acuteness when three or four men are thrown together for a few weeks entirely on their own social resources, the more so if throats be dry and a place of refreshment distant. Walking-tours resemble marriage—they are a give-and-take business, and it should be a pleasant change for a teacher, who perhaps is more in the habit of insisting on his own way than any other human being during Term time, to cultivate the habit of giving way in the holidays. Thus do we raise the walking tour to the height of a moral educator. A short time since three London public-schoolmasters set out one afternoon for a ramble, one, at any rate, well-known as an educationist and a school-book author, and they all returned home by different routes—a sad case of incompatibility of temper. The bare idea of these three joining the same fortnight's walking party is too much for contemplation. It is difficult to conceive of Wordsworth, Sir Humphrey Davy and Sir Walter Scott, who toiled together up the rugged brow of the mighty Helvellyn, returning by different ways through "incompatibility of temper." Neither can we imagine Matthew Arnold, Clough and Hallam walking to Pattendale and making the return journey in units. Even Charles Lamb, who, after cynically referring to Skiddaw as a fine creature, goes on to say that "Fleet Street and the Strand are better places to live in for good and all than amidst Skiddaw," seems to have been a companionable kind of mortal when amidst the beauties of Lakeland. Be that as it may, no one should be allowed to join a walking party who cannot be companionable.

As to the equipments for the tour, they are a matter for individual preference. A walking-shirt of the best cricketing flannel, a Norfolk jacket, knickerbockers, a straw hat, a light waterproof, and boots such as one wears ordinarily, only plus stouter soles, should be good enough. The knapsack, moreover, should not be overloaded. Some years ago, I made a walking-tour in Cork and Kerry with a friend who had included in his kit a small "Liddell & Scott," a "change suit," and sundry other luxuries, but he needed no persuasion to send them home long before we sighted Killarney. Hobnailed boots, familiar in the northern hives of manufacture, are by no means a necessity for a walking-tour, say, in Devonshire, Derbyshire or Cornwall. Of course, for mountain climbing, special foot-gear may be essential. Instead of unduly loading the knapsack, all necessary changes—except such minor ones as are wanted for the way—may be sent on to the mid-way place of halt, and even for minor ones the parcel post can be utilised. Indeed, as with organisation, equipment must not be overdone. This applies equally to those numerous preventive and curative appliances and drugs for which the present age is famous. One scarcely starts on a walking-tour with the notion that half the diseases known to the College of Physicians are on one's track, and not the whole Pharmacopœia need be consulted specially for the occasion. Many experienced pedestrians, however, tell us that for blisters the virtues of soap are considerable, and argue that for both tonics and digestives the fresh air and the exercise are unrivalled.

As to financial arrangements, these may best be left to one member of the party, who will have a splendid chance of winning golden opinions from

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all concerned. The consequent satisfaction and economy are, moreover, reasons for giving the Chancellor of the Exchequer a due and generous meed of praise. By a proper management of tips, to say nothing of a business-like arrangement with the various landlords on arrival, the Chancellor imparts a tone of judicious expenditure to the whole tour. If the party is suitably selected, the right man is sure to come to the fore. In return for the good offices of the finance leader, each of the other members will assume control over some other branch, *e.g.*, A will check the map and mark out the route, B will set the pace for the passing hour—act as a kind of stroke, C will settle what hotels to stay at. In this way each will emulate the other in promoting the success of the tour.

In connection with accounts, let us put in a good word for the diary. Some of these old, worn pocket-books, companions during many happy moments gone by, we would not part with for worlds. Here, for example, is an extract from such a one, and from it I find that, years ago, in Brittany, I was wandering home to Douarnenez, when I lost myself in some flax-fields on the cliffs. Then comes a story of a barking dog, a lane leading to a farm-house, a wrong turn, a distant church-clock striking midnight, and finally a "doss" under a corn rick in a field above the cliffs, the moon shining bright and the waves plashing gently on to the shore below." That doss under the corn rick lasted, I remember, until daybreak the following morning.

Another entry of a very simple nature, made in Westphalia, and dated August 11th, runs: Chocolate 22 pf., selzer 25 pf., extremely hot. This phrase "extremely hot" recalls vividly the above August 11th. The walk was between Korbach and Arohlsen in Waldeck Pyrmont, and the hills and fields around were swarming with soldiers. On an eminence sat a high military dignitary on horseback surveying the sweltering mimicry of war, rolling clouds of dust on the highway enveloping the Army. A peasant had given us a lift in a long wooden waggon, and we were borne jolting along the narrow bottom of the same—part and parcel of the Autumn manœuvres, and I blush to add, amid the jeers of the surrounding German Army—Forsitan et olim haec juvabit meminisse.

Now, although a diary may be commended, it is doubtful whether there is wisdom in combining the wider sphere of journalism with a walking-tour. The man who sees in the small towns of the Schwarz-wald or the polytechnics of the larger German cities scope for magazine articles on technical education may well reserve these efforts for a special occasion. A combination of business and pleasure does not suit a walking-tour, the essence of which is to enjoy rather than to utilise, to yield to the holiday mood, to emulate the sweet serenity of the famous painter who, on being consulted as to suitable hours for rising and retirement, replied: "If I'm happy in bed I stop in bed, and if I'm happy up I stop up."

In conclusion is the question of routes.[1] The following ground may, at any rate, serve as a suggestion, even if not adopted to the letter. At places, italicised in the English and Westphalian tours, beds will probably be procurable.

(*a*) Devonshire (Dartmoor Walk). Route: *Exeter*, *Moreton Hampstead*, *Chagford*, *Okehampton*, Lydford, *Tavistock*, *Plymouth* (the mid-way objective), Shaugh, the Dewar Stone, *Yelverton*, *Princestown*, Two Bridges, Post Bridge, Widdicombe in the Moor, Manaton, *Moreton Hampstead*, *Exeter*. The beauties of Dartmoor, such as the Gorge at Lydford, Yestor, Dartmeet, and the Hut Circles may be easily included, and, though the walk between Exeter and Moreton Hampstead occurs twice, the precipitous and verdure-clad valley of the Teign is of special beauty. Exeter and Plymouth, too, are cities of no common interest.

(*b*) Derbyshire. Route: Cromford, *Ashbourne*, Dovedale, Milldale, Berresford Dale, Hartington, *Bakewell*, Monsal Dale, *Buxton* (midway), Tideswell, *Castleton* (Peveril of the Peak), Bamford, Ashopton, *Hathersage*, Froggat Edge, Eyam (of plague fame), *Baslow*, Chatsworth, Haddon Hall, *Matlock*, Cromford—about 100 miles in all, the stages in italics being evenly divided. The literary, historical and geological associations recalled by the above names are unique for so short a tour, which, however, may well be extended to a fortnight. Derbyshire will probably be a specially favourite week-end tour with Londoners, now that the Midland Railway is offering cheap tickets.

(*c*) Scotland. Route: Boat, in first instance, to Edinburgh and train to Callander. Then, with knapsack *via* Loch Lubnaig, Lochearnhead (for Benvoirlich), Killin, Loch Tay, Lawers (for Ben Lawers), Aberfeldy, Kinloch Rannoch, Loch Garrie, Dalnaspidal, Dalwhinnie, Kingussie, Aviemore, Grantown, Nethybridge (for Cairngorm and McDhui), Aviemore, the Larig Pass, Derry Lodge, Inverey, Castleton of Braemar, Ballater, and train to Aberdeen and Edinburgh. This wild and rugged tour should only be undertaken by those prepared to rough it. Beds are difficult to secure, even in civilised Scotland, in August, and the crossing of the Grampians, from Speyside to Deeside is a passage both long and over heavy ground, so I make no attempt to indicate stages for each night. Anyone writing to me, however, is welcome to all advice I can give privately.

(*d*) Westphalian and Thuringian Tour, three to five weeks' duration. Route: Return ticket to *Düsseldorf*, and then on foot to *Elberfeld*, *Lüdenschied*, *Plettenberg*, *Schmallenberg*, *Winterberg*, *Corbach*, *Arohlsen*, *Warburg*, and *Cassel*. After Cassel the route lies through Thuringia, including Rheinhardtsbrun (birthplace of Prince Albert), the Wartburg, Annathal, *Gotha*, and finishes at *Erfurt*. I have never yet met anyone who has walked this tour, which, though not striking, was full of interest and economical, the bills for supper, bed

[1] Suitable maps should be obtained and distances checked on all these routes before starting on the tour. Unless this precaution is adopted disaster may ensue.—A.G.M.

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and breakfast averaging, perhaps, about five to six marks. I find, from my notebook, that from Erfurt the train was taken to Homburg and the venture concluded by a Rhine trip from Bingen to Cologne.

(*e*) The Harz. A fellow-lover of walking, Mr. R. H. Allpress, recommends the following, and suggests the daily routes thus: 1st day, Nordhausen, lunch at Stolberg, sleep at Mägdesprung; 2nd day, drive to Falkenstein, and walk to Gernrode; 3rd day, walk to Thale; 4th day, drive to Blankenburg, and walk to Wernigerode; 5th day, up and down Brocken to Ilsenburg; 6th day, drive to Harzburg; 7th day, walk to Goslar; 8th day, walk to Klausthal; 9th day, walk to St. Andreasburg; 10th day, Herzberg by mid-day, and then on by train to Göttingen. The first of the above stages covers 32 miles.

(*f*) Cornish coast and inland tour. Route: *Launceston*, *Camelford*, *Boscastle*, *Tintagel*, *Wadebridge* (Trevose Head), *Columb Major*, *Newquay*, *Truro*, train to *St. Ives*, then walk to St. Just, follow coast line to Land's End (Logan Rock), inland to *Penzance* (midway halt), coastline along Mount's Bay, past St. Michael's Mount and *Marazion*, Prussia Cove, *Porthleven*, Loo Pool, Gunwalloe, *Mullion*. Kynance Cove, *Lizard*, inland to *Helston*, coach to *Falmouth*, Fal River steamer to *Truro*, *Bodmin*, Bodmin Moor and Jamaica Inn (Brown Willie), *Launceston*. N.B.—Deviation from the coast line is made some miles before reaching Porthleven, at a point known as the Bishop's Rock, a little past Præsands.

As to lodgings, I don't think a walking party can do better than select their inns or hotels from the list issued by the Cyclists' Touring Club, when possible. Even pedestrians cycle nowadays, and the benefit of using the club's hotels well repays the subscription. When no suitable inn has been previously selected one should never arrive at the night's objective tired and weary. In this way an unsuitable inn or hotel may be hurriedly chosen, and the pleasure of the stay spoilt.

One final word should be said regarding the probable cost of a walking tour. No law can be laid down, though, with a good finance leader, a very happy time should be had on anything between 7s. 6d. to 12s. a day, according to the class of hotel chosen.

ALL Nature laughed, and her mirth was spring. Then in me also a new spring awoke; new flowers budded in my heart; sensations of liberty bloomed forth like roses, and secret longings, like early violets springing up between many a useless nettle. Hope once more threw its green glamour over the graves of my dead desires; the melodies of poetry came back to me, even as the birds of passage quit their warm southern winter homes to seek again their forsaken northern mists; this wearied northern heart of mine beat and expanded once again as in days of yore, only I know not how it came about. Is it a fair or a brown sun that has re-awakened the spring-time in my heart, has kissed to waking the sleeping flowers, and therein, by her smile, has taught the nightingales to sing? Was it generous Nature herself who sought to rouse her echo in my breast, and who mirrored therein her springtide glory?—Heinrich Heine.

HINTS ON CYCLE TOURING.

By HERBERT M. RANKILOR.
Wensleydale School, Aysgarth.

THE summer term is hurrying on, and already we begin to feel the pressure of approaching examinations, prize days, speech days and the thousand-and-one other worries with which schoolmasters delight to crowd the latter days of the longest and most enjoyable term in the year. While yet there is time we shall do well to discuss our plans for the Long Vacation—that blessed interval which enables us to forget for a while our "prunes and prisms," and, turning our backs on school and all that is therein, to get away, away, far as we can, into the free, open country, over hill and dale, drinking in huge gulps of the salt sea-breeze or the fragrant breath of the moorland, while our tired bodies regain somewhat of their former elasticity, and our weary hearts once more rejoice as we shake off the chains of responsibility.

But we are still some weeks ahead of time, and if we would keep our reputation for common sense, we shall begin our preparations without delay. We have decided to join the ranks of the cycling tourists—or touring cyclists—and we wish to get the greatest possible benefit out of our holiday. Our first step, and one that should be taken without delay, is to join the Cyclists' Touring Club (if, indeed, we are not already members of that much-abused, invaluable institution). The candidate for admission must send to the Secretary, 47, Victoria Street, S.W., a form duly filled up and countersigned by some member of the club. Copies of this form can be obtained from the secretary, who will also give full information as to the conditions of membership. There is an entrance fee of one shilling, and an annual subscription of five shillings. The advantages of membership are many. The club Handbook contains the names, addresses and tariffs of thousands of hotels, boarding and lodging houses; of hundreds of repairers and consuls, these last being local members who have undertaken to give such advice and help as may be possible to members touring in unknown country. The Year-Book contains a mass of information as to the mechanism and care of the machine, the hygiene of cycling, hints to tourists, railway and steamboat charges and numerous other matters, in each case the work of an expert. Then again there are the club Road-books, describing minutely the chief cycling roads in the British Isles, and last, but not least, the *Gazette*, a monthly publication, far and away the best cycling paper in the country. It must not be forgotten that the C.T.C. is cosmopolitan, and those who are proposing to tour abroad will find the ticket of membership invaluable, if only on account of the privileges accorded to its owner by nearly all European governments.

We may next take stock of the machine, on which the success of our holiday will so largely depend. It *must* be strong and serviceable, with a trust-

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worthy brake, preferably of the "rim" variety. There are several good ones, and a host of bad ones on the market,—none better than the Torbay Company's brake (Paignton, Devon). The ordinary spoon brake, acting on the front tyre, is not to be relied on for touring. Doubtless many cyclists tour without stronger brake-power than this—some, indeed, ride without any brake—but in both cases the risks are greater than are justifiable. In addition to the brake, we shall want a powerful bell—country folk want a lot of waking up—lamp and pump in thorough working order, a properly fitted tool bag and, most important of all, sound tyres. These constitute an irreducible minimum; with less we should court disaster. We ought to be prepared to mend a puncture, and it would be well to be able to adjust chain, handle-bar, &c., in case of need.

The next question to be considered is where to go, and it is one which cannot be dealt with adequately within the limits of this article. Those who have not yet tried Devonshire may do so with confidence. Nowhere in England can be found greater variety of scenery in so comparatively limited area. The roads are, on the whole, good, though somewhat hilly. The accommodation is excellent, and compares most favourably, in the matter of expense, with any other district in the country. The C.T.C. Handbook shows that it is possible to get full board and lodging at a cost of from 15s. to £7 per week, limits wide enough to meet any reasonable requirements. The towns and villages are at sufficiently small distances apart, and the "natives" are, for the most part, civil and obliging. Ilfracombe, Barnstaple, Bideford, in the north; Plymouth, Dartmouth, Totnes, Paignton, Torquay, Teignmouth, Newton Abbot, Dawlish, Exeter, Exmouth and Sidmouth in the south; all these form good centres, and are but a few of the many places in the county where one is sure of a hearty welcome. It is an ideal country for a cycling holiday, glorious scenery of the most varied description, landscape and seascape, moorland and valley, bold, rocky coasts here, long stretches of golden sands there, a profusion of ferns and wild flowers for the botanist, trout streams for the fisherman, old castles and churches for the antiquarian, and, if the fates be propitious, glorious sunshine and pure, fresh air for all.

To those whose thoughts are directed northwards the Yorkshire dales and the Lake District may both be suggested. The roads are fairly good, in some parts excellent, though here, as elsewhere, the finest scenery can only be enjoyed by means of a walking tour with cycle. It is, perhaps, more difficult to get accommodation here than in Devon, and, on the whole, charges are higher. At Aysgarth, for example, the centre of Wensleydale, there is only one small hotel, usually full during the season, and a number of lodging houses, few of which can be called high class, and none of which are really moderate in their tariffs, considering the nature of the accommodation. It is certainly advisable to make arrangements beforehand. The C.T.C. Handbook gives details of many inns and lodging houses, not, in this district, the best, for these will not always come under contract. The N.E.R., in common with the other great lines, issue, gratis, a list of farm and other lodging-houses. It is in this connection that a member of the C.T.C. often scores, for he can usually get an opinion from the nearest local consul as to the sort of accommodation likely to be obtained in his neighbourhood.

In the Lake District prices run very high during the season. It is quite possible to cycle from here to Kendal or Penrith, and run round the principal lakes and back again in the course of three or four days, though of course this method of "seeing" the lakes cannot be recommended. A better plan is to work from a centre, such as Penrith, Keswick or Kendal, and return each night, taking sufficient food for the day in order to avoid excessive charges for lunch, &c.

The vast number of delightful touring districts in England makes even the bare mention of them an impossibility, within the limits of this paper. Bakewell, in the centre of the Peak district, is too hilly for the average cyclist. Cromford, Grindleford and Rowsley, in Derbyshire; Alcester, Binton, and Stratford-on-Avon in Warwickshire; Ledbury, Symond's Yat and Titley in Hereford; and Cheddar in Somerset, are a few, chosen almost haphazard, but any one of which can hardly fail to satisfy the most exacting.

A friend suggests a couple of short tours in Wales, which may be given here: (1) Chester, Holywell, Colwyn, Bangor, Llanrwst, Corwen, Llangollen, Shrewsbury. (2) Oswestry, Llangollen, Corwen, Bala, Dolgelly, Aberystwyth by Devil's Bridge, Rhayder, New Radnor, Hereford, Ludlow, Shrewsbury.

There are at least two ways in which we may set about our tour. We may decide on riding from place to place, staying only one night at each, or we may select a suitable centre, and radiate from that centre for a week, and then on again. We could also combine the two methods. Each plan has its own merits, but we shall find the second to be much cheaper, and with certain advantages not to be despised. In the first case, we have to take our luggage with us, or to arrange every day for its transmission to our next destination. This means that we shall almost certainly arrive before our clothes, and not infrequently shall have to do without them—a serious consideration in wet weather. On the other hand, we shall be free, within limits, to settle our itinerary as we go along, and to change our route as often as we may feel inclined to do. Touring from a centre, which may be changed once a week, we have no daily luggage worries, and we shall certainly be able to see a district more thoroughly than in any other way.

With regard to maps, the best are Bartholomew's 2-inch Ordnance Survey, and they are sufficient for all ordinary purposes. Having decided on our destination, we shall do well to read one or more of the excellent guide-books which are recommended by the C.T.C. The best of these are too

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large to be carried on the machine, but they should be packed with the luggage. A wet evening at a country inn is not the most lively of experiences, and we may be quite certain that, even should our inn be an hotel, there will be no available literature, except, perhaps, in large and much-frequented resorts.

Cyclists who go abroad for the holidays will find the following hints useful:—

English railways convey cycles at owners' risk at ordinary luggage rates, plus a special fee of 5s. If the cycle and ordinary luggage does not exceed 56lb. only the special fee is charged.

Many of the companies allow cyclists to go by one route and return by another, such as the South-Western *via* Havre out, and back by St. Malo, or the South-Eastern and Chatham *via* Calais out, and home *via* Antwerp.

In France a duty levied by weight, amounting to about 25s., is charged on each cycle, but is returnable when coming back on proof being given that it was paid by the claimant.

In Belgium the duty is 12 per cent. *ad valorem*, but the cyclist who fixes the value of his machine at a suspiciously low rate may find that the Belgian Government claims to buy it at his own price. This duty is also returned on leaving the country.

In Italy the duty is forty-two lire, and in Switzerland 10 fr. 50 c., but in Austria it is twenty-five gulden, payable in gold (£2 10s.). Members of the Cyclist Touring Club have the privilege of taking their machines free into any of these countries, on showing their C.T.C. ticket, but for Austria a special ticket is issued.

Cyclists planning Continental tours will do well to remember that many routes which look attractive on the map are rendered almost impossible by cobble roads or other disadvantages, and the Cyclists' Touring Club's advice as to roads, routes, and charges is invaluable to the tourist on wheels.

The writer will gladly answer enquiries from any reader who encloses a stamped, directed envelope for reply.

A NEW LONDON TRAINING COLLEGE FOR TEACHERS.

By T. A. ORGAN, L.C.C.
Vice-Chairman of the London Technical Education Board.

IN October, 1902, it is proposed to start a new London Training College for Teachers. The proposal is the outcome of long and careful investigation by the Technical Education Board of the London County Council. By a very large majority, and in spite of a spirited opposition, the Council has approved the proposal, and has sanctioned the suggestion of the Technical Education Board, that the necessary expenditure shall be defrayed out of the funds which the Council annually devotes to technical education. It is estimated that the annual cost to the Council will be about £3,000, assuming that the number of students is 100 or thereabouts.

The need for such a training college forced itself upon the Board at a very early stage in its work. More recently the School Board for London has memorialised the Technical Education Board to take steps to secure for London students an increase in the facilities for training as teachers. The memorial called attention to the fact that only 85 per cent. of the men, and little over 50 per cent. of the women qualified to enter a training college, and desirous of doing so, were able to secure admission. It was further stated by the School Board that many students were placed under religious disabilities, as the accommodation at undenominational training colleges was quite inadequate.

Then with regard to the work of the County Council itself as the authority dealing with the secondary education of London, it was soon found that such work was seriously hampered by a lack of skilled teachers. The London County Council, through its Technical Education Board, subsidises many secondary schools and technical institutions. In these schools and institutions more than 3,000 teachers are employed. Sporadic attempts have been made by the Board to give training in the art of teaching special subjects. In co-operation with University College, King's College, and Bedford College, various Saturday and other classes for teachers have been arranged, with the object of improving the methods of instruction in such subjects as arithmetic, mechanics, chemistry, and electricity. Of late, the development of the Board's scholarship scheme has compelled more than mere academic discussion of the problem. As the largest scholarship-giving body in the British Empire, the Board was greatly embarrassed by the difficulty of finding opportunities for the economical teaching of the scholarship holders who desired to enter upon teaching as their professional work. This embarrassment was especially felt in the case of women who found themselves compelled to go to Aberystwyth and other towns, if they wished to obtain the training and instruction which would fit them for the profession of teaching.

Apparently the London School Board would have established a training college had it not been *ultra vires* for them to do so. Before memorialising the Technical Education Board, the School Board were advised by their solicitor that they could not legally devote any part of the school fund to the purposes of either a day or residential training college. That such expenditure is *intra vires* of the London County Council there is no doubt. It will be remembered that in the Technical Instruction Act of 1899 technical instruction is defined as follows:—

The expression "technical instruction" shall mean instruction in the principles of science and art applicable to industries, and in the application of special branches of science and art to specific industries or employments. It shall not include teaching the practice of any trade or industry or employment, but, save as aforesaid, shall include instruction in the branches of science and art with respect to which grants are for the time being made by the secondary branch of the Board of Education, and any other form of instruction (including modern languages, and commercial and agricultural subjects) which may for the time being be sanctioned by that Board by a minute laid before

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Parliament, and made on the representation of a local authority that such a form of instruction is required by the circumstances of its district.

The instruction of teachers in the application of special branches of science and art to their specific employment is therefore within the general definition; but the point has been made quite clear by a decision of the Board of Education. "Any other form of instruction" becomes included within the statutory definition of technical instruction on being sanctioned by that Board with certain formalities. The London County Council have obtained express sanction to give aid not only for instruction in the "principles of education as applied to the teaching of technical subjects," but also for instruction in the "science and art of teaching."

The broad outlines of a scheme for the management and curriculum of the new college have been approved. First, as to the general control, that will rest with the County Council as the body responsible for the finding of the funds. Doubtless the Council will delegate the exercise of its control to the Technical Education Board, and there may be a College Committee which will be charged with the details of administration, and with advising the Technical Education Board on matters which require expert and minute investigation.

The college will be in connection with the London University, and it is contemplated that the principal will hold the rank of professor in the University. There will be a number of men and women full-time lecturers, in addition to supplementary courses by University teachers. The college will be open to men and women who have been engaged in teaching or who purpose to enter *any* branch of the teaching profession. It is the view of the Technical Education Board that every detail of the final scheme shall tend to the obliteration of all differences between the training of those who intend to become teachers in primary schools and those who intend to become teachers in secondary schools.

It is proposed that the college shall set a high standard, and that, with this view, students entering for its regular full course shall be required to have passed the London Matriculation Examination, or some University examination considered equivalent thereto.

The teaching and training given will aim:

(*a*) At equipping students for teaching in any branch of the profession.

(*b*) At fulfilling all the requirements of the Board of Education for a Day Training College.

(*c*) At enabling students to take the London degrees of B.A. and B.Sc., and the Teachers' Diploma of the same University.

The course of instruction will be so arranged as to make it possible for a student who has already graduated to devote himself continuously for a year to the theory, history and practice of education, and obtain the London University Teachers' Diploma. At the same time provision will be made for undergraduate students taking a three-years' course in such a way as to satisfy both the requirements of the Board of Education and those of the examinations for the London B.A. or B.Sc. It is believed that the School Board for London will willingly allow its schools to be used for the necessary practice, under proper conditions; and the Technical Education Board will be able to arrange for a similar use of secondary schools and other educational institutions of every type.

It is not proposed to spend capital in erecting a new building, but to obtain sufficient accommodation, including laboratories, at an adequate rental, in one or other of the existing colleges or other educational buildings more or less connected with the University. The point has not yet been considered, but I am hopeful that the requirements of the college will soon outgrow the accommodation to be found in any one building, and that in three or four years there will be a college of 400 or 500 students, having their working premises in four or five different parts of the County of London. Although primarily for London students, it does not appear to have been decided that the provincial student is to be rigorously excluded. Should there be any great influx from the provinces, the establishment of recognised hostels may become a necessity.

It is proposed that steps should be taken to ensure its opening with 100 selected students, and that a certain number of London teachers, who have passed the London Matriculation Examination (or other equivalent test), and who are qualified to hold King's scholarships from the Board of Education, should be annually selected for admission. These students, holding their King's scholarships at the institution, will receive a three-years' course of training, the Government grant of £10 a year for each student being received by the institution, every man student receiving from the Government the sum of £25, and every woman student £20.

It is suggested that other students shall be admitted, if duly qualified, on payment of fees, which may be about £15 per annum for the full curriculum, with special fees for particular courses. A certain number of London students will be specially nominated by the London Technical Education Board for free tuition in the full three-years' course.

In connection with the grants made to King's scholars, it should be noted that the next examination for such scholarships will be held on December 10th, 1901, and that any person can attend the examination who is either a pupil-teacher in a public elementary school or a person who will be over 18 years of age on October 1st, 1902. Further, the authorities of the college may propose for a King's scholarship, with all its attendant pecuniary benefits:

(*a*) Any graduate, or person qualified by examination to become a graduate, in Arts or Science of any University in the British Empire recognised by the Board of Education, who wishes to enter the College for a year's training.

(*b*) Any candidate over 18 years of age who has passed since January 1st, 1899, one of the following examinations:—

(1) The Higher Certificate of the Oxford and Cambridge Schools Examination Board in subjects approved by the Board.

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(2) The Oxford University Higher Local Examination.
(3) The Cambridge University Higher Local Examination.
(4) The London University Matriculation Examination.
(5) The Victoria University Preliminary Examination.
(6) The Birmingham University Matriculation Examination.
(7) The University of Wales Matriculation Examination, if the candidate passes in all five subjects at one examination.
(8) The Oxford University Senior Local Examination (Honours) in subjects approved by the Board.
(9) The Cambridge University Senior Local Examination (Honours) in subjects approved by the Board.
(10) The Senior Certificate Examination of the Central Welsh Board, if the certificate is obtained in such and so many subjects in combination as are recognised by the University of Wales as equivalent to the Matriculation Examination of the University.
(11) The Royal University of Ireland Matriculation Examination.
(12) Any corresponding or higher examination approved for the purpose by the Board of Education.

ON THE CELEBRATION OF THE KING ALFRED MILLENARY IN SCHOOLS.

By F. J. C. Hearnshaw, M.A., LL.M.
Lecturer in History at the Hartley College, Southampton.

The Aims of the Teaching of History in Schools.

THE occurrence of the millenary commemoration of the death of King Alfred in the autumn of the present year affords an excellent opportunity to teachers of history to develop and illustrate the resources of their subject as a means of education.

If we admit with Herbart that the chief aim of education generally is the formation of character, we shall see that several important traits of character can be fostered best by history, if not by history alone. It is by the study of the lives of great patriots that the interests of a child are widened till they include love of country. It is acquaintance with the fascinating stories of the achievements of the pioneers of exploration and colonisation which broadens love of country into the larger and worthier devotion to the Empire. It is by the telling of the deeds of the heroes of the nations that the teacher can most surely lead his pupils on to feel that still ampler and nobler enthusiasm for Humanity as a whole which in a fully-developed and well-balanced character must take precedence of all limited loves.

The Greatness of King Alfred.

Now in King Alfred all the best traits of the saint, the patriot, the empire-builder, and the servant of Man were exquisitely and harmoniously combined. No turbulence of vice disturbed the serenity of his private life; no taint of personal ambition marred his pure devotion to the good of his fatherland; his dealings with Danes, Mercians, Jutes, and Britons showed the genius of a born founder of imperial dominion; his embassies to Rome and to India; his hospitality to Saxons, Franks, and Irish; his translations of the works of Italian Boethius, and Spanish Orosius revealed a mind whose interests were limited by no barriers of race or locality, but were wide as Humanity itself. At home and abroad, in peace and in war, whether toiling with hand or working with brain, he earned the title of "Great," which has been conferred on him alone of all the long line of English kings, although among them have been men of no small desert. A nobler model it would be impossible to hold up for the admiration and imitation of the young.

A Scheme for Celebrating the King Alfred Millenary.

In order to furnish a few suggestions of a practical nature as to what may be done to make the children of England familiar with the life and deeds of our chief national hero, I append the outline of a sheme which has been set on foot in connection with the public elementary schools of Southampton and neighbourhood.

(1) *A Public Inaugural Lecture* will be given in June or July, 1901, mainly for the benefit of teachers in order to arouse their sympathy with the celebration and to call their attention to the most important features of Alfred's life.

(2) *The Lecturer in History in the Hartley College, Southampton*, will pay a visit to the schools one by one, and will endeavour, by means of a brief address and pictures, to excite the interest of the children in the great king and his times.

(3) *The Teachers throughout the schools* will take the elder scholars (aged 10 and upwards) through a course of lessons on the reign of Alfred. A special sixpenny text-book has been prepared for the scholars. For the use of the teachers a collection of about a dozen of the best authorities on the period has been placed in the reference library of the Hartley College. In addition, it is hoped that a short series of lectures by eminent historians may be arranged for.

(4) *Examinations* will be held in the autumn, and prizes awarded on their results. First, each school will hold its own examination and give such prizes as it thinks fit. Then the few best pupils from all the schools will meet for a general examination to be held in the Hartley College, where they will compete for prizes the funds for which are being raised by subscription.

(5) *A Great Demonstration* will be held in the Hartley College on the occasion of the general prize-giving, about October 26th (the traditional date of Alfred's death). A series of tableaux will be given—each school being responsible for one or two—together with songs and readings illustrative of the period, or explanatory of the tableaux.

(6) *Excursions to Winchester* to view and examine the Cathedral, the remains of Wolvesey Castle and Hyde Abbey, and other relics of the age of Alfred, are projected.

Such are the main features of the scheme, the originator of and prime mover in which is Mr. T. G. Rooper, M.A., H.M.I.

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BOOKS ON KING ALFRED AND HIS PERIOD.

Among the most serviceable books for those who wish to study the reign of King Alfred are the following:—

(1) "Alfred the West Saxon," by Dugald Macfadyen, M.A. (1901, Dent & Co., 4s. 6d. net.)—Quite the best of the many lives of King Alfred. Written in an interesting style, and (though frankly non-critical) embodying the result of most recent research. Generally accurate and trustworthy.

(2) "Alfred the Great," by Thomas Hughes. (1869, Macmillan, 6s.)—A life written with a fine enthusiasm by the author of "Tom Brown's Schooldays." Specially full and valuable on the campaigns of Alfred. Shows, however, too great a credence in the legends of the later chroniclers.

(3) "The Story of Alfred the Great," by Hawkins and Thornton Smith. (1900, Horace Marshall and Son, 2s.)—An excellent and accurate short sketch, well written, printed and illustrated.

(4) "Alfred the Great." Edited by Bowker. (1899, A. and C. Black, 5s.)—Containing useful essays on various aspects of Alfred's life and times by authors of high standing, *e.g.*, Frederic Harrison, the Bishop of Bristol, C. Oman.

(5) "Life of Alfred the Great," by R. Pauli (translated 1853, Bohn, 5s.).

(6) "Alfred le Grand," par Guillaume Guizot. (1856, Hachette, 2s. 6d.)—Both superseded as authorities, but interesting as containing continental views of England's great king.

(7) "Alfred in the Chroniclers," by Edward Conybeare, M.A. (1900, Elliot Stock, 6s. 6d.)—Contains a concise introductory sketch of Alfred's life, followed by translations in full of all the main authorities (and pseudo-authorities) on which our knowledge of Alfred is based.

(8) "Alfred the Great," a sketch and seven studies, by Warwick H. Draper, M.A. (1900, Elliot Stock, 4s. 6d.)—Consists of a very meagre outline of Alfred's career, supplemented by a series of essays on special subjects interesting to students, *e.g.*, the value of MSS. as an original authority. A full bibliography forms a useful addition to this volume.

(9) "Alfred the Great and his Abbeys," by J. C. Wall. (1900, Elliot Stock, 5s.)—Deals with the three religious houses founded by Alfred, but contains very little about the founder.

(10) "The Jubilee Edition of the works of Alfred." (1852, 2 vols.)—Includes all the writings of Alfred—originals and translations—together with useful essays on various aspects of the period. The volumes may be consulted in the large libraries, but they are, I believe, otherwise inaccessible. Alfred's "Boethius"—text and modern version—is published by Bohn, 5s.

(11) "The Making of England," by J. R. Green. (Longmans' "Silver Library," 2 vols., 3s. 6d. each.)—Gives the best general account of English history during the early English period.

It may be added that the National Home Reading Union has just held (June 22nd-29th) its annual meeting at Winchester, and has devoted the greater part of its time to the study of the life and times of King Alfred. Lectures have been given by the Bishop of Bristol, the Dean of Winchester, Dr. T. J. Lawrence, and others, which, if published, should furnish valuable summaries of authentic information.

EDUCATIONAL ASPECTS OF RECENT ARCHAEOLOGICAL RESEARCH.

BY F. E. THOMPSON, M.A.

V.—IMPERIAL ROME.

IT has been well said that "no state ever left behind it such abundant and instructive remains as the Roman Empire. Inscriptions by hundreds of thousands, coins of all dates and places, ruins of fortresses, towns, villas, roads, supply the great gaps left by ancient writers. Most of this evidence has been uncovered in the last fifty years. The Empire, misdescribed by its own Romans, has arisen from the earth to vindicate itself before us." (F. Haverfield in "Archaeology Sacred and Profane.")

But unfortunately the history of this Empire is not taught in our schools. It would be a worthy task for a competent writer to draw up a sketch of some 300 pages by the light of recent research, abundantly illustrated by good cuts. Such a book might at least be used in pupil-rooms, or as an "extra." It would open the eye of the schoolboy to an unknown world; it would be the best possible introduction to all subsequent European history secular and ecclesiastical.

For archaeology not only supplies facts unrecorded by literature concerning the external structure of Roman rule, its administration, finance, commerce, military organisation, and local government; it also reveals tendencies social and religious.

(1) With regard to administration, we should watch the development of the dual government, Imperial and Senatorial, seeing how the former, commenced by Augustus, after a sharp struggle under the Flavian dynasty, supplanted the latter; how Caesar became a title; how the Princeps became an Imperator and a Dominus; how the Imperial financial system and the Civil Service, with its bureaucratic network, was extended; how the Palatine was transformed from a residential quarter to a seat of public offices; how Rome ceased to be the residence of the Emperor, and how wherever the Emperor was there Rome was, whether at Milan, Ravenna, Trier, York, or Byzantium.

(2) With regard to military organisation, we should see what legions were recruited in what provinces. We should know of their stations, fire brigades, burial guilds, engineering works, and frontiers. We should see how Rome at first recruited no barbarians, and needed no frontiers; but how, as she declined, she enlisted the former and constructed the latter in North Britain, from Rhine to Danube, along the Sahara, in the Arabian Desert, and on the Euphrates.

(3) Excavations of such sites as Calleva (Sil-

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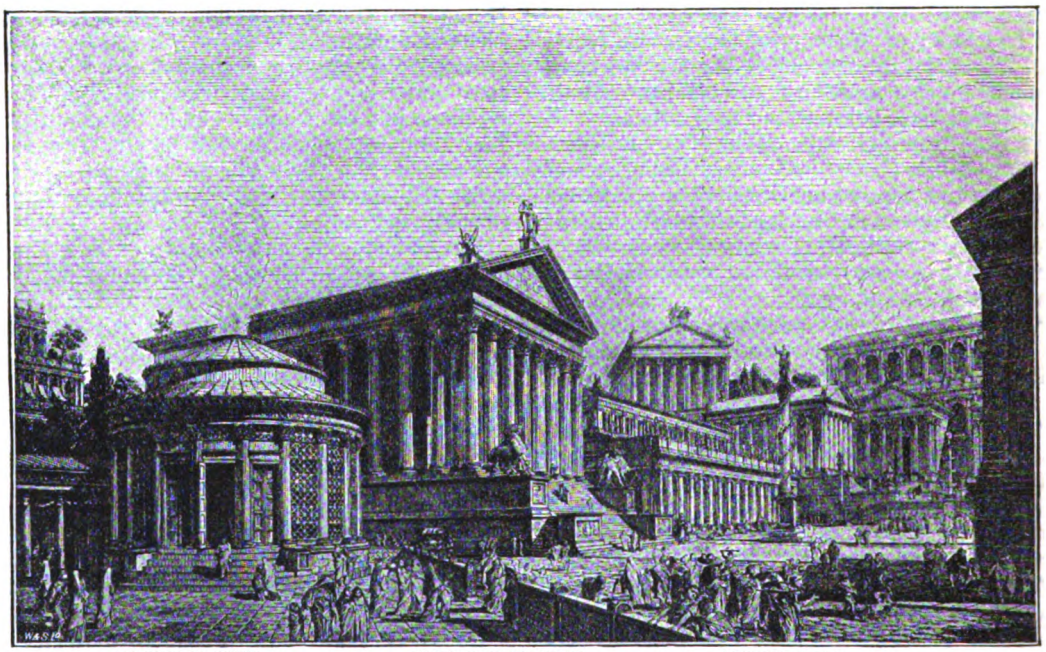
chester), with its forum and shops, temple and early church, measure the progress of civilisation in a distant and barbarous province. The rough native pottery, side by side with the red "Samian" ware, shows how the old lived on with the new. In Scotland and Ireland patterns suggesting "Mycenaean" influences long survived in metal work and missals.

(4) Excavations such as those of Carnutum and Vindobona (Vienna), on the Danube, elucidate the origin and growth of local government. A military fort is planted. Outside this there grows up a civilian colony of traders living in huts. This collection of huts becomes a town, and finally a *municipium* or borough, with magistrates, and with typical buildings, forum, curia, law courts, basilica, banks, and shops. Where the civilisation of a province was of a high order, as in Greece, the existing government was allowed to go on subject to the inspection of *correctores*, but in Africa and the West generally the Roman municipal system was introduced.

(5) Lastly, the discoveries of chapels of Mithras at Rome and Ostia, taken together with Mithraic inscriptions and sculptures to be found over the whole Empire, wherever there were soldiers and traders, show how important a part these esoteric cults played in the religious life of the people. Obscure as the subject is, yet it seems probable that, amid the cold philosophies and lifeless state-religions of the day, these mystic systems, in spite of their exaggerations, appealed to the inner man by keeping alive a sense of guilt and a desire for union with the divine life, and so were a preparation for, while they were formidable rivals of, Christianity.



TEMPLE OF VESTA. TEMPLE OF CASTORES. BASILICA IULIA.

Auer's Restoration of the Temple of Vesta and other buildings in the Sacra Via and Forum. The original hut built by Numa to preserve the sacred fire perished in the invasion of the Gauls, B.C. 391. The second temple perished in the conflagration of 191 A.D. Julia Domna, wife of Septimius Severus, rebuilt it. In 394 Theodosius extinguished the mysterious fire which had been kept burning for over a thousand years. The temple was intact in 1489. It was destroyed and used for material in the building of St. Peter's.

Biblical Archaeology.

It was the intention of the writer of these papers to describe some of the most conspicuous results of Biblical Archaeology. But space is not left for this part of the subject; nor is the omission serious, since, owing to their absorbing interest, the chief results have already been popularised. But all who are anxious to see the question treated adequately as a whole should read the extremely able essay by Dr. Driver in "Authority and Archaeology Sacred and Profane." Especial attention is directed to the latter part of the essay, in which the different provinces of criticism and archaeology are carefully defined. This is an important distinction, as an incorrect impression has been encouraged that archaeology is in conflict with criticism.

The sum of the results of biblical archaeology may be briefly stated. The Hebrews, the religious race of the world, have been taken out of their position of isolation in which tradition, based on too narrow a survey of history, had placed them. Israel is not now regarded as a distinct species endowed at its creation with the highest religious conceptions. Religion has been a process of slow but sure evolution. The choosing of the Hebrew people is seen to mean a gradual emerging from the lower conceptions which they shared with other races, so that they became the exponents of the highest religious ideals. But man is by nature religious, and in the mind of the savage, when touched with awe, there exists the germ which in the Hebrew race expanded into the perfect flower. Were not this so, how could the teaching of

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prophet, psalmist, and evangelist appeal to the human conscience? There is no dispute of the fact of revelation, the question concerns the method of Divine working, and surely the wider view gives the nobler conception.

Of archaeological research as affecting the books of the New Testament there is no time to speak. But allusion may be made to Prof. Ramsay's explorations in Asia Minor, which have thrown so much new light on the life and writings of St. Paul, and to Messrs. Grenfell's and Hunt's extremely interesting discovery of the "Sayings of our Lord."

PRACTICAL SUGGESTIONS.

It only remains to show the bearings of archaeology on school teaching. The subject will be considered from the point of view of a practical schoolmaster.

I.—It seems impossible to add another subject to the already crowded time-table, unless a strong case is made out for the exclusion of one already taught. In the case of archaeology it seems particularly unwise to specialise at schools, since the study must rest on a sound general classical training.

II.—But a good deal may be done in various ways:—

(*a*) By appointing, as is already done in several schools, one master at least who, though not necessarily an expert, has a good working acquaintance with the subject. He would act as a book of reference, and be the leaven in the lump.

(*b*) By placing in school libraries a selection of the best books on the subject. And here a subscription to one or more of the archaeological societies may be urged in the interest alike of schools and societies.

(*c*) Possibly by the creation, as in some schools, of a museum of casts, facsimile coins, maps, and photographs. This suggestion is made with full knowledge of the divided opinion of schoolmasters on the subject. Time is scarce, and museums are useless without continued enthusiasm, a commodity rare in schools as elsewhere.

(*d*) By encouraging masters to avail themselves of the excellent opportunities offered of travel during vacations.

(*e*) By occasional lectures given by experts with knowledge at first-hand. Headmasters have a wide circle of acquaintances, and experts have enthusiasm enough to respond to the call.

But when all is said the real thing is to recognise that archaeology has an important bearing on the teaching of Greek and Latin. All practical men know that the steady "grind" in grammar, translation, and composition will take up the bulk of the teacher's time. But there is the danger that the dust of this grinding may lie thick on the intellects of masters and boys. The suggestion offered is not that a new subject may be introduced, but that the old teaching may be relieved, elucidated, and illustrated by fresh knowledge. The well furnished teacher, like the scribe who brings out from his treasures things old and new, will not turn his lesson into an archaeological lecture, but as time and occasion serve he will explain and illustrate words and allusions, and by happy touches make the pages of the Greek and Roman poets, historians, and orators instinct with life. The ampler the stores of a teacher's learning the more judicious will be his selection from those stores, the less will he repeat himself, the less will he weary himself and his pupils, the more will he believe in his calling. Increase of knowledge has always been accompanied by adaptation of teaching. The whole class will gain something from increased variety and freshness of the teaching, and here and there the seed may fall on congenial soil. It is only by the employment of the best methods that classical study can hope to maintain, if not a supreme, yet an important place in our highest education.

Recommended for References.—Lanciani's "Ancient Rome in the Light of Recent Discoveries." "The Ruins and Excavations of Ancient Rome." "The Destruction of Ancient Rome." "Archaeological Research in Italy," by F. von Duhn, in the *Journal of Hellenic Studies*, vol. xvi. This Journal and the *Classical Review* give notices from time to time of new discoveries. "The Roman World," by F. Haverfield, in "Authority and Archaeology," an essay to which the writer is much indebted for his account of Imperial Rome. A paper in the March number (1901) of *The Nineteenth Century and After*, by Giacomo Boni. For biblical archaeology, Dr. Driver's Essay already referred to.

TYPICAL SCHOOL TIME-TABLES.

VII.—THE ROYAL HIGH SCHOOL, EDINBURGH.

IN continuing our Typical School Time-tables, we are able this month, owing to the courtesy of the Rector, Dr. J. Marshall, to present the scheme of work of one of the most important of the day public-schools of Scotland. Up to the present we have confined our attention to England and Wales, and we are particularly glad of this opportunity of giving our readers the data necessary to form an opinion of how the excellent results associated with Scottish schools are ensured.

It will assist a proper understanding of the time-table to point out that there are 537 boys in the Royal High School, of whom 253 are in the senior school and 284 in the middle school. The ages of the boys in the middle school range from 7 to 14 years, while the boys in the senior division remain until 18 years.

In the time-table, as it is circulated to the different classes, the name of a master is attached to each subject. We have not printed these names, since the important consideration to students of school administration is how the available time is apportioned among the different school subjects. It is, however, to be observed that, by the system of *parallel instruction* under different masters in the several subjects, it is possible to regroup the boys according to their respective attainments in each.

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ROYAL HIGH SCHOOL, EDINBURGH.

TIME TABLE OF MIDDLE AND SENIOR SCHOOLS, 1900-1901.

CLASS	9.10 to 10.	10.5 to 10.50.	10.55 to 11.35.	11.40 to 12.20.	12.50 to 1.30.	1.35 to 2.15.	2.20 to 3.	3.5 to 4.
I Remove	(*Daily*) Writing	(*Daily*) Arithmetic	(*Daily*) Dictation	(*Daily*) Arithmetic	(*Daily*) English	(*Mon Wed*) English (*Tues Thurs Fri*) Gymnastics	Dismiss at 2.15	
I Junior	(*Daily*) Writing	(*Daily*) Arithmetic	(*Daily*) Dictation	(*Daily*) English	(*Daily*) Arithmetic	(*Mon Wed*) Gymnastics (*Tues Thurs Fri*) English	Dismiss at 2.15	
I Senior	(*Daily*) English	(*Daily*) Arithmetic	(*Daily*) English	(*Mon Wed Fri*) Gymnastics (*Tues Thurs*) Writing	(Daily) French	(*Daily*) Arithmetic	Dismiss at 2 15	
II A	(*Daily*) Latin	(*Mon Wed Fri*) English (*Tues Thurs*) Latin	(*Daily*) English	(*Mon Wed Fri*) Gymnastics (*Tues Thurs*) Writing	(*Daily*) French	(*Daily*) Arithmetic	(*Mon Wed Fri*) Latin (*Tues Thurs*) Arithmetic	
II B	(*Daily*) Latin	(*Mon Wed Fri*) English (*Tues Thurs*) Gymnastics	(*Daily*) Arithmetic	(*Daily*) French	(*Daily*) Latin	(*Daily*) English	(*Mon Wed Fri*) Arithmetic (*Tues Thurs*) Writing	
II C	(*Daily*) Latin	(*Mon Wed Fri*) Gymnastics (*Tues Thurs*) English	(*Daily*) English	(*Daily*) French	(*Daily*) Latin	(*Daily*) Arithmetic	(*Mon Wed Fri*) English (*Tues Thurs*) Writing	
III Science	(*Daily*) French	(*Mon Wed Fri*) Physics (Theory) (*Tues Thurs*) Physics (Practical)	(*Mon Wed Fri*) Mathematics (*Tues Thurs*) Practical Physics	(*Mon* 12 *to* 1.30) Laboratory (*Wed*) Lecture (*Tues Thurs Fri*) Drawing	(*Mon* 12 *to* 1.30) (*Wed* 12.45 *to* 2.15) Laboratory Gymnastics, or Drawing (*Tues Thurs Fri*)	(*Wed* 12.45 *to* 2.15) Laboratory (*Mon Tues Thurs Fri*) English	(*Daily*) Mathematics	(*Wed Fri*) Workshop
III Commercial	(*Daily*) French	(*Mon Wed Fri*) Book-keeping (*Tues Thurs*) Physiology	(*Daily*) Arithmetic	(*Mon Wed Fri*) Shorthand (*Tues Thurs*) Gymnastics or Drawing	(*Daily*) English	(*Daily*) German *Juniors*—Arithmetic	(*Mon Wed Fri*) English (*Tues Thurs*) Drawing or Gymnastics	
III Modern	(*Daily*) French	(*Daily*) Latin	(*Mon Wed Fri*) Mathematics (*Tues Thurs*) Gymnastics	(*Daily*) Latin	(*Daily*) English	(*Daily*) German	(*Daily*) Mathematics	
III Classical	(*Daily*) French	(*Daily*) Latin	(*Mon Wed Fri*) Mathematics (*Tues Thurs*) Gymnastics	(*Daily*) Latin	(*Daily*) English	(*Daily*) Greek	(*Daily*) Mathematics	
IV Science	(*Daily* German *if desired*) (*Tues Thurs*) Gymnastics	(*Daily*) English	(*Daily*) French	(*Daily*) Mathematics	(*Mon Wed*) Physics (Lecture) (*Tues Thurs*) Drawing (*Fri*) Chemistry (Lecture)	(*Daily*) Mathematics	(*Mon*) Workshop (*Tues Thurs*) Practical Physics (*Wed Fri*) Chemistry Laboratory	(*Mon*) Workshop (*Tues Thurs*) Practical Physics (*Wed Fri*) Chemistry Laboratory
IV Commercial	(*Daily*) German	(*Daily*) English	(*Daily*) French	(*Daily*) English	(*Daily*) Book-keeping	(*Daily*) Commercial Arithmetic	(*Mon Wed*) Gymnastics (*Tues Thurs Fri*) Shorthand	
IV Modern	(*Daily*) German	(*Daily*) English	(*Daily*) French	(*Daily*) Mathematics	(*Daily*) Latin	(*Daily*) Mathematics	(*Mon Wed Fri*) Gymnastics (*Tues Thurs*) Latin	
IV Classical	(*Daily*) Greek	(*Daily*) English	(*Daily*) French	(*Daily*) Mathematics	(*Daily*) Latin	(*Daily*) Mathematics	(*Mon Wed*) Greek (*Tues Thurs*) Latin (*Fri*) Gymnastics	
V and VI Science	(*Daily*) Geometry	(*Daily*) English	(*Mon Wed*) Geometry (*Tues Thurs*) Drawing (*Fri* 11 *to* 12.30) Chemistry (Laby)	(*Mon Wed*) Physics (Lecture) (*Tues Thurs*) Practical Physics (*Fri* 11 *to* 12.30) Chemistry (Laby)	(*Mon Wed* 12.20 *to* 1.5) Gymnastics (*Tues Thurs*) Practical Physics (*Fri*) Geometry	(*Mon*) Chemistry (Lecture) (*Tues Wed Thurs Fri*) French	(*Mon* 2.20 *to* 3.50) Chemistry (Laby) (*Tues Thurs*) Drawing (*Wed Fri*) Workshop	(*Mon* 2.20 *to* 3.50) Chemistry (Laboratory) (*Wed Fri* 3 *to* 3.30) Workshop
V Commercial	(*Daily*) Book-keeping	(*Daily*) English	(*Daily*) German	(*Daily*) Commercial Arithmetic	(*Mon Wed*) Gymnastics (*Tues Thurs Fri*) Shorthand	(*Daily*) French	(*Mon Wed Fri*) English (*Tues Thurs*) Foreign Correspondence	
V Modern	(*Daily*) Mathematics	(*Daily*) Latin	(*Daily*) German	(*Daily*) English	(*Daily*) Mathematics	(*Daily*) French	(*Mon Wed Fri*) Latin (*Tues Thurs*) Lat or Gymnastics	
V Classical	(*Daily*) Mathematics	(*Daily*) Latin	(*Mon Wed Fri*) Latin (*Tues Thurs*) Greek	(*Daily*) English	(*Daily*) Mathematics	(*Daily*) Greek	(*Mon Wed Fri*) French (*Tues Thurs*) Lat or Gymnastics	
VI Commercial	(*Daily*) Book-keeping	(*Daily*) English	(*Mon Wed*) Gymnastics (*Tues Thurs Fri*) Drawing	(*Mon Wed Fri*) Commercial Arithmetic (*Tues Thurs*) Shorthand	(*Daily*) Book-keeping	(*Daily*) French	(*Mon Wed Fri*) English (*Tues Thurs*) Foreign Correspondence	
VI Modern	(*Daily*) Mathematics	(*Daily*) Latin	(*Mon Wed Fri*) Latin (*Tues Thurs*) Gymnastics	(*Daily*) English	(*Daily*) Mathematics	(*Daily*) French	(*Mon Wed Thurs Fri*) German (*Tues*) Roman History	
VI Classical	(*Daily*) Mathematics	(*Daily*) Latin	(*Mon Wed Fri*) Latin (*Tues Thurs*) Greek	(*Daily*) English	(*Daily*) Mathematics	(*Daily*) Greek	(*Mon Wed Fri*) French (*Tues Thurs*) Ancient History	

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SCHOOL WORK IN RELATION TO BUSINESS.[1]

Commercial Education.—There are certain parts of the curriculum of a school which, without losing any of their value as intellectual exercises, might, if differently taught, send out our pupils better equipped than they now are for the life of commerce or of industry. The higher aim of education ought not to exclude or ignore the lower. Both are consistent and legitimate, and might well be pursued together. We do not want to resuscitate the "commercial academies" of the last generation, in which private, and often wholly unqualified, teachers sought the patronage of the less instructed parents by promising to prepare boys for the office or the shop, and then thought they were fulfilling that promise by means of elaborately-written and flourished copy-books; by letters couched in business phraseology; by sums in tare and tret; partnership and foreign exchange, and by the preparation of elaborate ledgers and cash-books, recording imaginary transactions on a vast scale. I have elsewhere referred to the testimony of a London banker of large business experience, of whom I once asked the question, "What are the qualifications you hold to be most important when you are seeking a new clerk for your bank?" His reply was very simple. "Next to a good character and reputable family associations, it is requisite that he should have had a good general education; that he should write well and have an intelligent acquaintance with arithmetic, and that he should *not* have learned book-keeping. In the office we have our own system of accounts, and we can teach him in a few days all that is distinctive in that system. He would be rather hindered than helped in acquiring this if he came to us with a formulated set of rules such as he would gain in the use of the school-book exercises. A sensible knowledge of the principles of arithmetic is of much more importance than the use of a number of book rules supposed to deal with practical or business problems."

Principles of Arithmetic.—It is somewhat of a reproach to our English schools that the theory of number—the principles of arithmetic—as distinguished from the solution of questions and problems, occupies relatively so unimportant a place in our teaching. This is partly owing to our ordinary method of conducting examinations, and to the unfortunate fact that so much of teaching is dominated by examinations and restricted to what will "pay" in them. An examiner in arithmetic sets sums and problems, and is satisfied if the answer is correct. But of the processes by which the result is attained he takes little heed, while of the student's knowledge of the *rationale* of these processes he cannot, from the very nature of the test, take any heed at all. It is otherwise in the French schools. There a *solution raisonnée*, often oral as well as written, is a necessary condition of success in an arithmetic examination. The truth is that arithmetic is the only bit of real mathematics which has found its way into the curriculum of the elementary school, almost the only, certainly the best, exercise in logic; it is the one subject which makes the greatest demand on the scholar's accuracy and concentration of thought. No other subject which we teach can approach it as a discipline in thinking, for in no other can certitude be attained by the same assured and orderly processes. Yet our school books give few or no demonstrative exercises. They make hardly any appeal to the reasoning faculty. They furnish a variety of empirical rules, and they group together a number of problems illustrating each of those rules. But when a question is proposed the learner is often fain to inquire helplessly, "What rule is it in?" a sure sign that he has been unintelligently taught. Now it may be safely said that in just the proportion in which the principles of arithmetic are taught demonstratively the necessity for rules becomes less and less. The pupil who has learned arithmetic rather as a science than as a collection of artifices for the working out of problems is in a condition in which he can make his own rules. Yet what can be more unsatisfactory than the attempts often made in schools to explain the processes of arithmetic? One hears a teacher give a lesson in subtraction and talk of "borrowing ten" and "paying back" one, though whence the ten is borrowed, how the carrying of one can compensate for the borrowing of ten, or what is the ethical justification of such a process, is left completely obscure, and the pupil is rather bewildered than enlightened. So when he comes to deal with fractions he is told that to divide by a vulgar fraction is to invert the numerator and the demoninator of the divisor, and then to treat it as a multiplier and to proceed as in multiplication. When he arrives at the Rule of Three, he is to arrange the terms in a certain order, and to multiply the second and third terms together and divide by the first. In like manner he is taught to extract the square root of a number by a process which must seem to him a kind of numerical conjuring or legerdemain. It is true that in all these cases a correct answer is attainable, but it is, after all, the process of attaining it which makes the exercise really educational. When a learner is shown that if we make equal additions to unequal numbers the difference between those numbers remains unaltered, the ordinary process of subtraction becomes intelligible and might, indeed, be suggested by the pupil himself. In like manner the theory of proportion, the involution of numbers and the extraction of roots admit of very interesting and effective demonstration. It is an insult to the understanding even of a young learner to give him rules which are unexplained and which leave him with a vague sense of mystery and enigma, but without any of the discipline which would have enabled him to find out or to invent the rules for himself. I think men of business are justified in asking schoolmasters to teach more than they do of the theory of arithmetic, because without it the learner, when he comes into an office and finds himself face to face with questions not in book form, will, though hampered with the memory of a number of rules, be quite incapable of bringing his own thought and inventiveness to new problems as they occur.

Rapid Reckoning.—Another arithmetical process which hardly receives all the attention it deserves, chiefly, I suppose, because its results are not so easily tested by examiners, is that of rapid oral computation. Here also the claims of intellectual discipline on the one hand, and those of active business life, are fully in harmony with each other. For quickness in perceiving the relation of number, concentration of the whole thought on the one subject in hand and perfect accuracy in the result, are not only of indispensable importance in the shop or the counting house, but they are valuable forms of general mental training, and are applicable not only to commerce but to many other of the interests and concerns of life. Here is the one region of educational discipline in which there is no need of any exercise of reason or reflection. Swift intuition, the dismissal from the mind of all irrelevant thoughts, and the use of a process which, though he may have reasoned it out beforehand, does not for the moment enter into consideration, but is applied deftly and by a happy knack, are the things wanted here; and there are many occasions in life, both in business and out of it, in which these qualifications are valuable. We are to remember also that in mental calculation rapidity is a great safeguard for accuracy. The quickest computers are the most correct. In running up a column of figures or in calculating interest or averages mentally, all thinking is intrusive and fatal. Here, then, is a department of school work in which the habit of mind so much needed in a smart and prompt man of affairs may

[1] Abridged from a paper read before the Society of Arts by Sir Joshua Fitch, LL.D.

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be cultivated to good purpose, and may deserve to be called truly educational as well as practical.

The Metric System.—I think also that instruction in the "Metric" system ought to take a more prominent place in the arithmetical course than is usually assigned to it. One must leave to Parliament, to Chambers of Commerce and other public authorities, the responsibility of deciding on the expediency of making a change in our confused system of weights and measures. But meanwhile it is the task of the schoolmaster to prepare the next generation to exercise an intelligent judgment on this question whenever it emerges into the region of practical politics.

Some definite teaching on this interesting subject ought to be included in the curriculum of all our schools, primary and secondary: (1) because of the increasing use of the metric system in all kinds of scientific measurements, and in the manufacture of instruments of precision; and hence the necessity which arises for frequent conversion of foreign lengths and weights to English standards; (2) because the expediency of introducing, or at least of legalising the use of that system is sure to become a subject for the consideration of practical statesmen ere long, and it is well that the young should be rendered capable of understanding and applying it when the time comes. But besides and beyond all commercial considerations, the investigation of the origin of our weights and measures, the logical and historical conditions of the problem and the scientific basis of a symmetrical system, is itself a valuable intellectual exercise. It brings into prominence certain elementary facts of science. It sets the learner thinking about them. It teaches us to distinguish between what is natural and necessary, and what is purely arbitrary and conventional in our arithmetic. And it furnishes a key to much additional knowledge, which is fruitful in many other departments of life and experience besides those which are connected with politics and commerce.

Decimal Money.—Meanwhile it is often overlooked that our existing monetary system admits of convenient decimal treatment. Two shillings equals ·1, or decimal one of a pound sterling; ·05, or 5 in the second place, equals a shilling; and ·025 in the second and third places represents sixpence. The rule for converting money into decimal form, and reconverting all decimals of £1 into our current money, may be learned in five minutes; and once learned enables us to express all sums of money not below sixpence with perfect accuracy. Hence all calculations of interest, discount, and the like, may become simplified, without waiting for any legal change, by decimalising our own money for purposes of account. Of course if we go below sixpence and treat the farthing as $\frac{1}{1000}$ instead of $\frac{1}{960}$ of £1, there is liability to error. But otherwise the method is unerring and deserves more general adoption in schools.

Power of Expression.—For the right conduct of business, we need also a more accurate knowledge of our own language and command of its resources than is usually imparted in schools. The merchant needs agents who know how to convey their meaning with clearness, with dignity, and with conciseness. But the discipline needed for this is not the writing of so-called business letters, in which the phraseology of the counting-house is ostentatiously employed. The boy destined to be a man of affairs should know how to express himself generally on any subject that interests him and on which he has something to say. Many of our school exercises in composition are concerned with subjects that do not interest him, and on which he has little or nothing to say. The scholar needs both for his future business life, and for his own inward mental cultivation, the same things—the habit of reflection, the power to choose the right word, the abstinence from pedantry on the one hand and from slang on the other—and these qualities will be best developed in him by more frequent practice in writing freely, yet under criticism, on any subject within the range of his own experience—the description of what he has seen or admired, the facts and incidents of his daily life, the summary of the contents of some book he has read, and even his own thoughts and speculations about matters of public interest, such as the war, an election, the work of Parliament and local councils, or any subject which happens for the time to possess exceptional public interest. This is now very generally recognised in our best but not yet in all our elementary schools. Whoever is able to write fluently and in good taste on such topics will be ready to conduct commercial correspondence when he enters a place of business and learns, as he will do in a very short time, what are the particular transactions of the house, and the vocabulary it is accustomed to employ.

Oral Exercises.—And it is not only the written but the oral use of language in respect to which the man of business has a right to ask the schoolmaster to help him. We are accustomed to regard all exercise in the use of language as something to be written; and this is because teachers are sorely tempted to adapt their lessons to the requirements of examiners, who always use a written test. But if we look with fresh eyes upon the claims which are made upon us, both in the ordinary intercourse of life and in commercial pursuits, we shall see that the power of oral expression, of promptly, fluently, and exactly expressing our own thoughts in our own words, is in itself a very valuable power, which ought to be held in more esteem. Nothing struck me more in the schools of America than the importance attached by teachers to practice in the art of speaking. They would not be content, as English teachers often are, to receive answers to questions in the form of single words, or to obtain from the scholars simple affirmative or negative answers. They required answers to be in whole sentences, and not necessarily in the words of the book. And at the end of a lesson they would often call out a pupil and say, "Now stand up and tell the class what we have learned." I attribute the greater fluency and correctness with which Americans express themselves on public occasions to the habitual use of what I might call oral composition in their schools. We certainly need more of it in ours. The trader especially is interested in having agents who can explain a matter of business in a fitting and effective fashion, and who has at his command facts and arguments which are promptly available whenever they are required. Herein the demands of active life coincide with the demands of the moral and the intellectual life; for in both it is found that exact expression is at once a cause and an effect of accurate thinking.

Geography.—Geography is a subject which is held in small favour in the public schools, and in many secondary schools. But it is often taught in a very interesting and effective way in the best elementary schools. It is a subject in which all teachers alike are tempted to rely on the memory of mere names and statistics, partly perhaps because they are easily learned without much thought and because it makes a great show in an examination paper to set forth the length of the Amazon, the population of the North-West Provinces, and the latitude and longitude of Nootka Sound. Yet these and the like details are little more than encumbrances to the portative memory, and all we need in relation to these facts is to know where they are to be found and how to refer to them on the very rare occasions on which they are wanted. Geography, when well taught, may be made, both from the educational and the commercial point of view, one of the most fruitful of school exercises. Physical facts about climate, soil, nearness to the sea or to mountains, must first be shown, and afterwards the influence of these conditions on the wealth, the civilisation of the country, the employment of the people, their industry, and their political institutions. Descriptive geography is needed to give to the learner a sense of the richness, the variety, and the

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beauty of the world in which he has come to live; and commercial geography then has its place when the nature of the productions and the distribution of the population are shown to be the result of physical conditions. All knowledge of this kind is not only full of interest in itself and highly stimulating to reflection, observation, and inquiry, but it has a direct bearing on the career of the future merchant.

Economics and Ethics.—There is also a place—and it seems to me a very important place—in the scheme of instruction even of an elementary school for the elements of economics and political science. The laws which govern our industrial life, the division of labour, the circumstances which determine the rate of wages, the interchange of products between nations, the reasons for thrift and forethought, and the qualities which are most likely to ensure success in practical business, are all topics which admit of very easy illustration, and which can be made exceedingly interesting to thoughtful elder scholars, when the teacher knows how to deal with them.

The elements of economic science and some knowledge of the conditions of professional and economical prosperity have a very important bearing on the general education of the pupil, and on his aims and conduct in life, and are certainly not solely concerned with his career as a business man. Yet all business men will acknowledge that boys who have been conducted through such a course of training, and have been led to bring logic and conscience to the solution of some of the practical business of the world, are more likely than others to prove capable helpers in the details of business. And after all, the qualities of probity, industry, trustworthiness, forethought and methodical thinking, which go to make the successful man of business, are to a large extent the same qualities which go to secure an honourable and useful life in any professional or public career.

Essential Subjects.—I have tried to show that in the primary school, with its course fashioned on the theory that it is to end at the age of fourteen, it is not well to attempt any subject consciously designed to meet the needs of the shop or office. The sole business of such a school is to lay a good foundation of general culture and of mental exercise such as may prepare for, but not prematurely to anticipate subsequent specialisation. But there are parts of the course which, though applicable to all scholars, are of exceptional value to the future business man—these are, arithmetic in its principles, rapid calculation, the metric system, oral and written composition, industrial geography, and also some exercises in thinking about social economics, and the way in which conduct and character tell upon the future honour and usefulness of the citizen. But after fourteen—in the higher elementary school, in the evening continuation school, or in the polytechnic, a special class, devoted to commercial subjects, ought to be one of the alternatives presented to the scholar.

But there is one condition on which I desire to contend as indispensable. It is that in every advanced technical school, whether in one understood to be secondary or one largely technical, the scholar who joins the commercial class shall also join at least one other class, and shall be required to pursue *pari passu* with his business studies some other study which has no relation to business; it may be art, literature, a branch of science, or general history; something which he is helped to study for its own sake, because he likes it, because his mind is enriched and strengthened by it, and not because he has to pass an examination in it, or finds that it has a market value in the city. In no other way can the right balance of mind and character be preserved, and the claims of the higher life duly co-ordinated with those of wage-earning. Even in the school of technology or of commerce, we may not forget that "man doth not live by bread alone." Even there some room ought to be found for the culture of the literary taste, for "thoughts that breathe and words that burn," for poetry, for fancy, and for the intellectual aspirations which give dignity to leisure and joy to the home life.

MR. CARNEGIE'S GIFT TO SCOTTISH UNIVERSITIES.

THE trust deed under which Mr. Carnegie has set aside two millions sterling for behoof of the Scottish universities has been signed and sealed. The details of the deed of trust accompanying the announcement remove many of the fears that were felt, and answer many of the criticisms passed on the first crude outline that was given of the scheme. The preamble of the deed contains the statement by Mr. Carnegie that, "having retired from business, he deems it his duty, and one of his highest privileges, to administer the wealth that has come to him as a trustee on behalf of others." The leading features of the scheme may be briefly summarised as follows:—

(1) The trust is to be managed by an executive council of nine, who have the fullest power and discretion in expending the income in the way they think best fitted to promote the two main objects:—(*a*) to improve and extend the opportunities for scientific study and research in the universities of Scotland, and (*b*) to render attendance at these universities and the enjoyment of their advantages more available to the deserving and qualified youth of that country to whom the payment of fees might act as a barrier to the enjoyment of these advantages.

(2) Half the income is to be devoted to the improvement and extension of the universities of Scotland in the Faculties of Science and Medicine, and to improving and extending the opportunities for scientific study and research and increasing the facilities for acquiring a knowledge of history, economics, English literature and modern languages, and other subjects relating to a technical or commercial education. The other half of the income, or such part of it as is necessary, is to be devoted to the payment of the whole or part of the ordinary class-fees exigible by the universities from students of Scottish birth *or extraction*, or scholars who have given two years' attendance after the age of 14 at State-aided schools in Scotland, or such other schools as are under the inspection of the Scottish Education Department.

(3) The committee may give additional financial aid to students who show exceptional merit, and may withhold payments of fees in the cases of students guilty of misconduct or who fail to pass the ordinary examinations of the university within a reasonable time.

(4) Extra-mural colleges, schools or classes in Scotland, attendance at which is recognised as qualifying for graduation, are, on application, to be entitled to all the benefits of the scheme.

(5) The benefits of the trust are to be open both to men and women.

(6) The trustees are to have full power, by a majority of two-thirds of their number, to modify the conditions under which the funds may be applied, having regard always to the purposes of the donor.

The full consequences of this remarkable and munificent Deed of Gift cannot very well be foreseen, far less definitely detailed, but the heart and imagination of a people have been stirred by the act and by the fashion of its doing; the gratitude of a whole nation has gone forth in the most spontaneous and touching manner to the man, not so much for the magnificence of the gift, though none can appreciate that better than a Scot, as for

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the rare and almost unequalled nobility of his purposes and his transparent love for his native land. The Principal of Glasgow University, alone of public men, "has damned with faint praise" the objects aimed at by the trust; he is afraid the emphasis given to technical and scientific subjects, and the consequent neglect of philosophy and classics, may lower "the whole character of the intelligence of the people." This seems but another echo of the old and ever new controversy of the "Ancients" and "Moderns." But Principal Story's criticisms are probably also due to a very natural objection to the intrusion of a new governing body into the Scottish University system, and one, too, which, being the paymaster, may mould on its own lines the future development of these bodies. The possibilities of the new departure are almost endless, but certainly one of the first consequences must be the remodelling of the financial basis of our secondary educational system.

THE NEW SYSTEM OF IRISH INTERMEDIATE EDUCATION.

THE new scheme of the Board of Irish Intermediate Education is elaborate and complicated, and only an outline of its main provisions can be given in a short article. Taking it first from the point of view of the students: we find the four examinations (all in writing) still retained, notwithstanding the great mass of opinion given before the Commission against the retention of the preparatory grade. The retention of the senior grade is also a doubtful good, as, both for students going to the university and for the rest taking up some employment, the age at which it is taken is too advanced. The preparatory grade examination, however, is now only a qualifying pass examination, with an easy programme (five subjects to be taken) in Greek, Latin, English, Irish, French, German, Spanish, Italian, English Composition, Mathematics, Experimental Science and Drawing, and Drawing alone. (Throughout all the examinations Experimental Science cannot be taken without Drawing.) No honours or prizes are awarded in the preparatory grade by competition, but a sum, not exceeding £1 for each student who has passed, may be given to the manager of the school to be spent in prizes.

In all the other grades, that is, above the age of 14 or 15, the student must choose a grammar-school course or a modern course. In the former all subjects are open, but the following course of six subjects is obligatory:—English Composition, Latin, Greek *or* French *or* German, one mathematical subject and two other subjects. Special encouragement is in future to be given to German, as, in the case of boys, French will not be allowed as an alternative to Greek, while German will. Also 40 per cent. is necessary for a pass in all subjects, except German, in all grades, and Greek in the minor and middle grades, in which 30 per cent. will be sufficient. In the senior grade girls will not be required to take a mathematical subject, but, instead, two languages. This is almost the only difference between the courses for boys and those for girls. In the modern course, again, all subjects are open, but neither Greek nor Latin is obligatory. The obligatory course is English Composition, French or German, Experimental Science and Drawing, one mathematical subject and two other subjects.

All students can take pass or honours in these subjects. No prizes or exhibitions will be given on the pass course, and no places will be taken. In honour subjects only marks in *four* subjects will count towards prizes. In order to get exhibitions and prizes the student must limit himself to one only of three groups:—(*a*) a classical group, in which Greek and Latin honours will be required; (*b*) a modern literary group, in which French and German honours will be required; (*c*) a science group, in which honours in three mathematical subjects will be required. Exhibitions of varying amounts, and not higher than £20 in the junior, £30 in the middle and £50 in the senior grade, tenable only for *one* year, will be awarded. Such exhibitions will be paid to the manager of the school chosen by the student and his parents, or given to further the student's education or entrance into a means of livelihood. This is a change, as formerly the amount of the exhibition (tenable for three or two years in all but the senior grade) was handed to the student without any condition as to how it was to be spent, and often was not used for education at all. Bronze medals, book prizes and small money composition prizes will also be awarded.

It is to be remembered that no examinations whatever will take place in Physical Science subjects or Drawing. A satisfactory report from the Inspectors of the Department of Agriculture and Industries as to the attendance and progress of the pupils and the method of teaching in the school will determine that the student has passed, while for honours and prizes the pupils will be inspected *individually* by the same inspectors. The schools will receive the Science and Art grant from the Department on such students, in addition to what they receive through the Intermediate system.

In the programme several changes to enforce more rational education and check former abuses have been made. In the two higher grades no books in the languages are prescribed (except in English). All the translation will be at sight. Grammar questions, and grammar as a subject, is wholly abolished in all grades. Special books are to be read from which English Composition (a separate subject) will be set. English is not obligatory. It includes History, which seems to be extremely badly arranged and provided for in all grades. This is one of the worst features in the programme. On the whole, the examinations in all subjects promise to be easier and more rational than formerly, but this will largely depend on the examiners, and on whether a better system of revising the papers be adopted. Also, the number of subjects required for a pass, viz., six, and the number of marks, viz., 40 per cent., seem too large. The rules laid down for science-teaching by the Science and Art Department are excellent.

As regards the schools, they must submit to inspection, but, except in the case of Physical Science, no information is given in these rules as to how far inspection will be carried out, nor does the grant depend on it; it probably will be first introduced in languages, and then gradually extended. Each manager must supply the Board with a list—"the Intermediate School Roll" of his pupils within the ages for the Examinations, viz., over 13, and under 19, specifying which are entering for examination, and which not, with the reasons for declining to enter in the latter case. On *all* these students a capitation grant will be paid, provided 10 per cent. of them shall pass the examination. If over 80 per cent. pass a maximum grant will be paid, and from this, down to 10 per cent., there will be a sliding scale. The grant may be increased (*a*) by a maximum bonus of 50 per cent., if 80 per cent. of the students who pass, pass with honours, and (*b*) by a reduced bonus on a lower percentage of honour passes, computed on a sliding scale. No figures are at present given, as the amount cannot be fixed until the results of the examinations in 1902 are known. In the scheme of the Commission the grant might be increased if the school received a good report on inspection. Nothing is said of that in the programme. It is also a singular omission that the total number of marks assigned to each subject is not given. It is stated that money may be advanced to managers for improved equipment for science teaching and other objects.

The practical results of the scheme cannot be judged until it has been tried. The least satisfactory features seem to be,

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at first sight, (*a*) over-examination and arrangements, such as enforcing six subjects—which will perpetuate the evils of the former system; (*b*) the absence of any good system of inspection; (*c*) the inadequate treatment of some subjects, especially in the English group.

CURRENT GEOGRAPHICAL TOPICS.

By A. J. HERBERTSON, Ph.D., F.R.G.S.

The New Census.

AT the beginning or end of a decade the civilised peoples number themselves. The present censuses, of which the results are constantly being announced, have the additional interest of giving returns at the limits of two centuries, and suggesting many comparisons. In the British Isles the total population is now 42, compared with 38 millions in 1891, 28 millions in 1851, and 16 millions in 1801. In Great Britain the population steadily increased during the nineteenth century. Only in the distressful sister island was there a decrease in 1901 compared with 1801, and the population to-day is not much more than half what it was sixty years ago. A check in this decline is reported in 1901.

The new edition of the "Statesman's Year Book,"[1] an indispensable book of reference for every teacher of geography, contains figures from which we may draw useful comparisons. In 1801 the total population of European origin in the British Empire was about 16½ millions; in 1851 it was nearly double, say 31 millions; in 1901 it is over three times what it was in 1801, viz., 53½ millions. If we deduct the French and Dutch elements, we may estimate the British peoples of British origin at 51 millions.

Compare these figures for the British Empire with those for the United States. The white population in 1800 was 4½ millions; in 1850, 19½ millions, and in 1900, about 67 millions.

As far as regards population, the largest group of English-speaking people is in North America, where ours is the language of over 70 million white men, the majority of whom are of British origin. The British Isles are the next populous centre of English speakers, but here they number onlythree-fifths of those in the American area. The third English-speaking centre is the Australasian one, which is composed almost entirely of peoples of British origin, who now number over 4½ millions. South Africa is the fourth centre, and there about half a million are English in their ordinary speech. The English-speaking peoples of European descent, therefore, number nearly 120 millions.

If we add the English-speaking negroes of the United States and West Indies and English-speaking peoples in other possessions of the United Kingdom and the United States and elsewhere, the English-speaking peoples number between 130 and 135 millions.

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The immigration figures for the United States quoted in the "Statesman's Year Book" are of exceptional interest. On an average 380,000 settlers entered the United States every year during the past ten years. The greatest number of these came from the British Isles, although in some years immigrants from Germany have been the most numerous. In 1889-90 about 27 per cent. came from the United Kingdom, over 20 per cent. from Germany, and 11 per cent. from Scandinavia; *i.e.*, about three-fifths were Teutons or Kelts. Less than one-third were emigrants from Italy, Austria-Hungary and Russia.

In the past few years these proportions have changed. In 1899-1900 only 11 per cent. of the 448,572 immigrants were of British origin, 4 per cent. were German, and 7 per cent. Scandinavians—in all little more than one-fifth of the whole. The Italians formed 22 per cent., the Austria-Hungary emigrants 25½ per cent., and Russians 20 per cent.—over two-thirds of the whole. The prosperity of North-Western Europe in recent years accounts for the decrease in emigrants. The economic conditions of the other countries have not been so favourable. The dearth of food in parts of Russia and Italy has been great, taxation is exceptionally high in the latter, and political troubles exist in all.

It is difficult to discover how far a demand for cheap unskilled labour in the growing manufacturing enterprises of the United States has to do with these figures. The statistics of the next few years should be carefully examined. When the pinch of less prosperous trade and oppressive taxation begins to be felt in our own country, will the United States be the outlet of the more energetic of our unfortunates who find it hard to get a living?

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The growth of Russia is even more remarkable than that of the United States. Accurate statistics unfortunately are not available for the past.

In 1796 the population of the Empire was estimated at 36 millions, in 1851 at 68 millions, and the census of 1891, however, gave the population of the Empire at 135 millions, of whom at least two-thirds are pure Russians. The 90 million Russians, with the exception of the Chinese, are the largest group of men of one race with one language under one government.

Two regions are increasing in population more rapidly than the others. (1) The newly opened-up tracts of Siberia, whose population, including Amuria, is now over 5¾ millions of Russians, which may be compared with Canada. (For an account of Siberian development see Mr. Beazley's article in the *Scottish Geographical Magazine* for November, 1900.) (2) The south of Russia, on the black-earth lands, where wheat growing is becoming more and more important, and round the Oka and Donets coal-fields and industrial centres.

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The census figures from India bear eloquent testimony to the sufferings of that country from plague and famine in the past few years. In 1891 the population was 287 millions, an increase of over 33 millions compared with 1881. Had the increase continued in the same proportion, the population would have been very nearly 325 millions in 1901. The preliminary figures give only 294 millions, or over 30 millions less. Of course, 30 millions have not died, but this figure represents the check on the rate of growth of population in normal years by a series of abnormal ones.

The Map of the World in 1800 and 1900.

Two very useful maps by Mr. Bartholomew in the new issue of the "Statesman's Year Book" show the known world with its political divisions in 1800 and 1900. The cloudy tints which cover the regions unknown to us in 1800 have been dispersed over most of the land except within the polar circles. A century ago, two worlds existed, a Western or North Atlantic world, from the Urals to the Mississippi and Central America, and an Oriental World from India to Japan. The coasts and the mainland routes joining them were known, communications were slow and difficult, each world, each great division of each world, was isolated.

How different in 1900! A series of maps of the continents showing the main routes of communication illustrates the change. The western and eastern worlds are now in close contact, and Chinese wars are symptoms of the disturbances this is causing. The need for a knowledge of our neighbours

[1] Edited by J. Scott Keltie, LL.D., with the assistance of J. P. A. Renwick, M.A., LL.B. Pp. xliv. + 1320. (Macmillan & Co., Ltd., 1901.) 10s. 6d.

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and of their ways is imperative in the twentieth century, and our neighbours are now the whole human race.

The transitoriness of human institutions and the instability of political compared with physical geography are vividly illustrated in the two maps first referred to. The passing away of the Spanish and Ottoman empires, the growth of the British, Russian, United States, French and German empires, are graphically shown.

At present Europe is a continent of limited monarchies. North and South America and Australia are occupied by great self-governing commonwealths. Africa is a continent of European protectorates and spheres of influence. European interests predominate in Asia.

Of more immediate political changes, the practical occupation of Manchuria by Russia, and of the lands between the Orange and Limpopo by Britain, are the most important. Both superficially appear of great importance as necessary extensions of great empires giving political consolidation and economic expansion. In neither case has the political disturbance due to the inclusion of a large and vigorous alien population been sufficiently considered.

Of minor changes, the settlement of the boundary of French Guiana and the formation of a north-west frontier province in India, may be noted.

THE SCHOOL PULPIT.

NOTABLE PASSAGES FROM SERMONS PREACHED IN PUBLIC SCHOOLS.

Magnanimity.[1]

IT would seem as though at one time some particular virtue were more difficult to practise than at another, some vice or fault of character more common. Circumstances often determine the prevailing virtues and vices of a period in the life of a man or of a community. The soul of man knows it. At times even magnanimity appears to come easily, and pettiness to be detestable; and the soul flatters itself that ideals are after all not unattainable, whereas it is not the soul that has improved, but the soul's surroundings. The self-flatterer's house is swept and garnished for the old spirit to re-enter with a following of seven.

That temptation takes its shape and colour from circumstances explains perhaps the apparent dearth of magnanimity at the present time. Even the Church has experience of the famine. Where the virtue of magnanimity should be most conspicuous, pettiness of spirit and readiness to misinterpret and misrepresent are not uncommon; and these declare themselves in respect to questions that for an adult understanding, to say nothing of the Christian temper, have no sort of consequence. Men in a rage are not magnanimous, and perhaps men lose their temper most about things that do not matter. Magnanimity is a plant whose roots go deep down in the strong, generous soil of conviction and reason and justice, whereas temper thrives best in hot and hungry ground. If Jesus, who knew all men, was magnanimous, then men within the church of Christ, wholly unable as they are to read the heart, might at least reserve judgment in respect to the motives from which others act, or might even interpret their actions magnanimously. Motives are puzzling things. They are often composite when they are thought to be simple, and partake in good when they seem to be wholly evil. The magnanimous man is more likely to be right in his verdicts upon others than the harsh or the cynical. It is a sound principle for the judge of his neighbour to give his neighbour credit for at least as pure motives as the judge himself likes to take credit for. 'Tis a vast help to the judgment, and it makes some degree of equity possible in the interpretation of conduct.

If to imitate the magnanimity of Jesus is an ideal constantly forgotten at the present time in the church which Jesus founded, it is not surprising that in politics and in society there should be some lack of magnanimity. Even the rules of the game, the show and semblance of magnanimity, are neglected. Men will not shake hands before the swords cross. Is it the case that men are too much in earnest to think of compliments? It cannot be so. Belief in the justice of a cause, earnestness of conviction and in purpose, the desire to see truth prevail, are qualities that demand good company. They are more in keeping with magnanimity than with jealousy and bitterness, uncharitableness and recrimination. The tranquillity of spirit and the self-respect begotten of magnanimity are better fitted to advance truth and a just cause than excited feeling and neglect of good manners.

Those in this congregation whose position to-day compels both sympathy and interest perhaps ask themselves why the preacher has selected such a subject as this for their consideration, at a time when their thoughts rather incline to linger lovingly over their boyhood, or dwell hopefully on the anticipated triumphs of manhood. It is because manhood now begins for them that he so speaks. Unless the signs of the times are ill discovered, they are sure in regard to many great national interests and public movements to need magnanimity sorely. "It will be foul weather to-day, for the sky is red and lowering." Times of shock and tumult are at hand, when old ideas must make good their place, or else give ground before the new. Untried social forces are marshalling for war against old-established conditions. There is no saying what the end will be; but this much may be foretold: that the character of the conflict will primarily depend upon the spirit and temper in which it is fought out. Anyone can see what a difference magnanimity may make if exercised by one side or by both, by few or by many, in a great struggle. Fight, I beseech you, like men, delighting in the play and clash of swords, and not like children or angry women, sulking or scolding, or calling names. Put all your strength into each stroke, but let it be a fair, not a foul stroke. Let your weapon be the clean white blade of argument and reason. Keep the conflict a war of ideas, and not of classes or interests; or it may change, as this century has more than once seen it change, into "a battle of the warrior with confused noise, and garments rolled in blood."

[1] From a sermon preached in Abbey to Westminster boys by the Rev. W. G. Rutherford, M.A., LL.D., the Headmaster. The sermon is given in full in the recently published volume of sermons by the Headmaster of Westminster, entitled, "The Key of Knowledge." (Macmillan.) 1901. Price 6s.

OXFORD LOCAL EXAMINATIONS.

SET SUBJECTS FOR 1902.

THE regulations for the Oxford Local Examinations have now been published for July, 1902. Numerous changes have been introduced. There are several new conditions for passing in the Senior and Junior Examinations, and there has been a further adoption of the principle of alternative papers. The new special subjects prescribed are as follows:—

Preliminary.

Religious Knowledge.—(*a*) I. Samuel i.-xx., (*b*) St. Mark, (*c*) Acts i.-xii., (*d*) Church Catechism.

English History.—Either the Outlines from 1066 to 1399, or from 1603 to 1715.

English Author.—Either Scott's "Ivanhoe," or Keary's "Heroes of Asgard" (2nd edition, Macmillan), or Macaulay's "Horatius and Lake Regillus."

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Geography.—Full knowledge of Scotland and Germany, and an outline map of one of these, or of North America, will be given to be filled up.

Elementary Latin.—"Tales of the Roman Republic," Part II., by J. B. Allen (Clarendon Press).

Elementary French.—"Contes du petit château": First Series (Le petit Ravageot, Mademoiselle Sans-Soin) (Hachette).

Elementary German. — Niebuhr's "Heroengeschichten" (Clarendon Press).

Junior.

Religious Knowledge.—(i.) Either (*a*) I. Samuel; or (*b*) Acts i.-xvi.; or (*c*) Prayer Book; and (ii.) either (*d*) Psalms xlv.-lxxxiii. (omitting lii.-lix.); or (*e*) St. Mark or (*f*) St. John.

English Literature.—Either Shakespeare, "Julius Cæsar," or Scott, "Ivanhoe," or Scott, "Marmion."

History.—Either (*a*) The Outlines of Greek History from 445 to 323 B.C., with special questions on the Peloponnesian War; or (*b*) Outlines of General European History from 1095 to 1254; or (*c*) Outlines of English History from 1066 to 1399, with special questions on the reign of Edward III.; or (*d*) Outlines of English History from 1603 to 1715, with special questions on the period 1688 to 1715.

Geography.—General: Europe and North America. Special: Scotland, Germany and Australasia.

Latin.—(*a*) Pass Papers: Cæsar, De Bello Gallico II., or Virgil, Æneid V. (*b*) Advanced Papers: Livy VII., 1-32, and Horace, Odes I., 1-28, as well as pass subjects.

French.—Either "Pierrille," by Claretie (Hachette), or "Histoire d'un Conscrit de 1813," by Erckmann-Chatrian.

German.—Hauff's "Karavane."

Senior.

Religious Knowledge.—(i.) Either (*a*) I. Samuel; or (*b*) Acts i.-xvi.; or (*c*) I. Corinthians; or (*d*) St. Mark in Greek; or (*e*) Church Catechism.; *and* (ii.) Either (*f*) Psalms xlv.-lxxxiii. (omitting lii.-lix.); or (*g*) St. Mark; or (*h*) St. John.

English Literature.—Shakespeare's "Julius Cæsar," together with either Spencer's "Faërie Queene," Book I., or Lamb's "Essays of Elia" (First Series).

History.—As in the Junior, without special questions in (*c*) and (*d*).

Geography.—General: See "Junior." Special: British Isles, Australasia, Germany, the Balkan Peninsula.

Latin.—Two of the following (one prose and one verse): Virgil, Æneid V.; Horace, Odes I., II.; Livy VII.; Cæsar, De Bello Gallico I.-III.

Greek.—Two of the following (one prose and one verse): Euripides, Hecuba; Homer, Odyssey VI., VII.; Xenophon, Anabasis III., IV.; Herodotus VII. (c. 138-end).

SECONDARY SCHOOLS IN LONDON.

IN directing attention last month to the deputation which waited upon the Duke of Devonshire from the Incorporated Association of Headmasters we referred to "A Memorandum on Public Secondary Schools: Their relations, under a National System of Education, to Central and Local Authorities and to Board Schools as exemplified in London,"[1] which was presented to the Duke on that occasion. The pamphlet, with its tables of comparative statistics, merits the attention of all who are dissatisfied with the Education Bill.

[1] [Copies of the Memorandum can be obtained of Mr. H. Bendall, 37, Norfolk Street, Strand, W.C., by forwarding a stamped and addressed foolscap envelope.]

It is designed to support, by an example drawn from the county area of London, the policy of the Government in establishing a local authority with powers and adequate funds to aid secondary schools. In London, whilst the population has risen in ten years by 8 per cent. and the numbers attending board schools by 18 per cent., secondary schools for boys, in the absence of a responsible authority, have remained practically stationary. Many boys who would benefit by transference to a secondary school are kept back in elementary schools; this is shown by the large proportional increase in the upper standards. London, with 3 boys per 1,000 inhabitants attending public secondary schools, is far worse off than Berlin with 10 per 1,000, and than Boston, U.S.A., with 4·3 per 1,000. No such contrast can be drawn between these three cities as regards their elementary-school pupils.

The drift of the Memorandum is to show that existing education authorities with definite powers and adequate funds do their specified work satisfactorily. Secondary education, on the other hand, lacks any authority responsible for it as a whole. In consequence, no such authority has any duty imposed upon it of seeing that there are enough secondary schools, that these are of the right kinds, in the right place, and efficiently worked.

The general purpose of the statistics given in the Memorandum is not to compare one school with another, but to compare totals for 1891 with those for 1901, and in particular to demonstrate—

(*a*) That, as regards secondary education of a non-specialised type, the public provision in London for boys, which was decidedly inadequate in 1891, is still more inadequate in 1901. On the other hand, science teaching in public secondary schools has, under the Technical Instruction Acts, greatly increased in extent and presumably in efficiency.

(*b*) That between 1891 and 1901 ten schools providing general secondary education have disappeared from the area, while nine schools, of a different type, and mostly specialising in the direction of science, have been opened.

(*c*) That, within the nine years ending 1900, the London School Board has opened no fewer than 93 new school departments for boys, an increase of 23 per cent.

The statistics do not pretend to be complete. There are no figures as to voluntary schools, as to London boys at private or boarding schools, nor concerning the receipts from endowments and school fees in secondary schools.

In an introduction to the tables Dr. R. P. Scott arrives at certain general deductions and conclusions. He considers that the interests of elementary education are well looked after by a local authority invested by statute with adequate powers and possessed of sufficient resources; and that the teaching of science and other subjects coming under the Technical Instruction Acts is in like manner liberally supplied by a distinct local authority. On the other hand, no existing authority has hitherto been established with responsibility either for the supply or for the maintenance of secondary schools of a general, *i.e.*, non-specialised, type. No such responsibility attaches either to the Charity Commission, which deals with specific endowments only and has no general powers over any local area, or to the county councils, whose educational powers and funds, being conferred under the Technical Instruction Acts, are not applicable to secondary education as such.

Applying these general considerations to the case of London, Dr. Scott comes to the following conclusions:—

London needs a paramount education authority empowered to aid secondary education and to adjust the relations of different types of schools. The absence of such local authority in London responsible for secondary education *as such* may serve to account for the following results:—

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(i.) That, notwithstanding a considerable increase of population, public secondary schools of a non-specialised type have not increased, but decreased in number. This result is partly due to the extinction of eight schools which were aided neither by the central nor the local authority.

(ii.) That, notwithstanding a large increase in the numbers receiving free tuition in secondary schools (through scholarships of various kinds), a slight *decrease* has actually taken place in the number of boys attending public secondary schools.

(iii.) That, notwithstanding the receipt of considerable aid both from the central and the local authority, the number offee-paying pupils in secondary schools for boys has seriously decreased.

In contrast with these results it is to be observed—

(iv.) That the increase of pupils attending board schools has more than kept pace with the increase of population: the abolition of school fees has doubtless contributed to this result.

(v.) That, as regards the upper standards, the increase of numbers attending the higher board-schools is proportionately greater than the increase in board schools generally.

London needs a further provision of secondary schools.

(*a*) Large areas of dense population exist in which few, if any, public secondary schools exist, *e.g.*, North London, stretching on the one hand from St. Pancras to Highgate, and on the other from Hackney to Gospel Oak.

(*b*) Yet while the London County Council enjoys powers of aiding existing secondary schools in respect of technical subjects sanctioned by the Board of Education, the Council cannot build secondary schools or raise loans for that purpose, both which powers are possessed by the London School Board as regards elementary schools.

(*c*) The shifting of population and the growth of new neighbourhoods (*e.g.*, Muswell Hill or Streatham) in London have set up a natural demand for secondary education. To meet this demand no public powers or funds are legally available, either under the Technical Instruction Acts or under the Elementary Education Acts. The London School Board has endeavoured to extend its sphere of action over some of the ground which would naturally have belonged to a local secondary education authority; but the illegality of their action has been twice declared in courts of law, and the Board has decided (April 25th) not to appeal to the House of Lords. The Government's Education Bill, *inter alia*, authorises local authorities to provide a supply of secondary schools in reasonable proportion to population.

London needs not only a paramount local education authority, but also a single education budget. The object of the statistics relating to the London School Board is not to suggest that the total educational expenditure of London is by any means excessive, but to indicate that, in the interests both of educational economy and of educational efficiency, it is imperative that a complete school system should be set up, and that a paramount local authority should be invested with supervisory power to be exercised, directly or indirectly, over all educational institutions within its area, presumably with the exception of institutions of university rank; should be endowed with sufficient resources; and last, but by no means least, should be required to allocate to each branch of education, under a kind of education budget, funds necessary to ensure the efficient working of each.

The best training for the intelligence and the character and for the fostering of public spirit can alone come from a secondary school. It is obvious that any district that is insufficiently supplied with these "nurseries" of public spirit and trained intelligence must be at a serious disadvantage in comparison with the others, through the standard of intellectual expectancy in the area being lower than need be.—Cloudesley Brereton.

ELEMENTARY EDUCATION IN 1900.

Dr. Macnamara's analysis of the Board of Education's Annual Return, published as a supplement to the *Schoolmaster* of June 1st, is not pleasant reading for those who desire the better education of English children. But it is a document which, it is to be hoped, will engage the attention not only of our legislators but of all who are able in any measure to improve the present attitude of national indifference to education. The object its author had in writing "Schools and Scholars in 1901," as the supplement is called, was to provide the reformer with "powder and shot" in his work of levelling matters up by means of speeches and articles. There is abundance of material here ably arranged and graphically commented upon, and we devoutly hope that Dr. Macnamara may have his heart's desire and see a substantial advance next year.

"Schools and Scholars" first tackles the attendance problem. For the year ending August 31st, 1900, there were in England and Wales places in the public elementary schools for 6,544,092 children. On the school books are the names of 5,705,675 children. The daily average attendance is 4,687,646. Thus, every time the schools are opened there are over a million children absent. A very considerable number of these are inexcusably absent. The figures given above may be expressed as a percentage of regularity of 82·1, that is, on an average every child whose name is on the books stays away one whole day per five that the schools are open. But four-fifths of the children make from 90 to 95 per cent. of the possible number of attendances, so that the other fifth, "children of indifferent parents," must, to lower the average to 82·1, "attend atrociously irregularly, making anything under 25 per cent. of the possible attendances," again to use Dr. Macnamara's expression. In 1891 the average percentage of regularity was 77·6, so that nine years of Free Education have given us the very poor improvement of 4·5 per cent. The attendance in England is best in Bedfordshire (82·7) and worst in Monmouthshire (77·2). In Wales every county is below the average; Glamorgan is best with a percentage of 79·1, and Anglesey worst with 71·9.

The early age at which children leave school is next discussed. One reads with a shock that in 1900 the percentage of children over ten years of age in our public elementary schools was only 34·92. "As the law stands at present, a child may leave school at twelve years, if he has passed the bye-law standard of exemption, to work *half-time* in a factory or workshop, or *full-time* outside of a factory, workshop, or mine." While the limit of compulsion is in England twelve years of age, in New York, Connecticut, Michigan and New Mexico it is sixteen; in Saxony, seventeen; and in Baden and Saxe-Weimar it is sixteen, to name one or two examples. But there is more disheartening information as the account proceeds. The average percentage of boys above Standard IV. has fallen from 19·7 for 1899 to 18·5 for 1900. In the case of the girls there is a similar drop from 20·0 for 1899 to 19·4 for 1900. In both cases Huntingdonshire is the worst county; the number of boys per cent. above the fourth Standard is eleven (!), the number of girls 13·7 per cent. In the face of facts like these there is no difficulty in understanding the oft-repeated complaints of technical education authorities of the inadequate preliminary training of the evening students of technical schools.

The story of the poor children who, while yet attending school, have also to take up the task of bread-winning is told here in a simple, direct way with very little comment. But it is a sad story, well calculated to make the heart ache. As we follow the details, "The Cry of the Children" will come to the mind, and the wish frames itself that a second Mrs. Browning may soon arise. One or two of the instances quoted, not exceptionally painful, will serve to show their nature. The remarks occur in the replies to a form of inquiry sent out to the

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elementary schools by the Board of Education. "I understand that some of the little ones work in the quarry before coming to school in the morning, during the dinner hour, and in the evening. Of course, they are not very fit for school work." "One boy begins work for his father as early as 3 a.m., and works again in the evening as late as 9 p.m. He often goes to sleep during morning school from sheer weariness." "Another boy, employed at placing skittles for 34½ hours per week, says he is engaged from 6 to 11 p.m. daily. The lad is often asleep in the afternoon during the progress of the lessons." What is to be said of the fact that 131 children under seven years of age are working for wages out of school hours? Between seven and ten there are 38,489 of these juvenile wage-earners. Well may Dr. Macnamara call it the "humiliating story of England's shame!"

EDUCATIONAL ASSOCIATIONS AND THE BILL.

THE chief associations of schoolmasters, schoolmistresses, and other educationists have, during the past month, given careful attention to the Education Bill, and have in some cases put their opinions on record in the form of resolutions. In other cases a special committee have drafted motions to be submitted, at a later date, to a general meeting of the Association. We print below, in the order in which they have been received, the resolutions which have been sent to us by representative associations, since they give a clear indication of the way in which the Bill has been received by the authorities concerned with different grades of education.

Association of School Boards.

At the Annual Meeting of the Association of School Boards it was agreed that, while the Association still adhere to the resolution which they have passed on several occasions, that it is essential that all grades of education should, in districts of suitable size, be under one local authority elected solely for educational purposes, due provision being made for safeguarding the interests of voluntary and other schools, with the right of appeal to the Board of Education, the Association desire to oppose the Government's Education Bill, as it neither provides for, nor prepares the way for providing, a satisfactory solution of the education question, and is especially defective in respect of the following particulars:—

(1) The imperfect character of the constitution of the education authority, and the absence of any statutory representation of school boards on that authority as proposed by the Secondary Education Commission.

(2) The unworkable character of Clause VIII., as it places school boards in a position of dependence on the county councils and the Board of Education, and gives the county councils power to dispose of the school fund over which the Act of 1870 gave the school boards full control. A further objection to this clause is that it deals only with existing schools, and therefore deprives many localities of the power of giving such expansion to higher-grade education as is absolutely needed.

(3) The impossibility of making arrangements such as suggested in Clause IX. in time for the opening of the schools next session. It is absolutely necessary, therefore, that permission should be given to maintain the *status quo*.

(4) The anomaly of the removal from school boards of the chief control of evening continuation schools, as indicated by Clause IV.

National Union of Teachers.

The Executive of the National Union of Teachers have adopted the following resolution unanimously:—"That unless upon the second reading stage of the Education Bill the Government give a pledge that during the committee stage—

(1) The clauses which prohibit the new Local Authority from assisting and administering public elementary day schools, board and voluntary, shall be withdrawn;

(2) The limit of rating power by the new Local Authority shall be removed;

(3) The mode of constituting the new Local Authority shall be left to the express option of the ratepayers in London and the county boroughs; and

(4) Where the administration of public elementary day-schools is not transferred to the new Local Authority the school boards shall be empowered to provide and maintain, of their own authority and out of the school fund, the higher-grade and evening continuation schools declared by the 'Cockerton' judgment to be at present unauthorised by law;

Then, in the opinion of the Executive of the National Union of Teachers, the second reading and further progress of the Bill should be strenuously opposed."

Association of Technical Institutions.

At a meeting of the Council recently held it was resolved that a special meeting of the Association should be held to consider the Government Education Bill and to recommend the Association to adopt the following resolutions:—

(1) That this Association strongly approves the general principles on which the Government Education Bill of 1901 is based and trusts that the Government will pass it, with such amendments as may prove necessary, in the present session of Parliament.

(2) That this Association is of opinion that the Bill should prescribe that the residue under section one of the Local Taxation (Customs and Excise) Act, 1890, including any balance thereof which may remain unexpended at the end of the financial year, *shall* be applied for the purposes of Education and shall be administered by the Education Authority.

(3) That, in view of the fact that the Bill proposes to repeal the Technical Instruction Acts, 1889 and 1891, this Association considers that the extension of the rating power by only one penny in the pound is wholly inadequate—especially in the case of the County Boroughs—to defray the necessary additional charges in respect of secondary education which will fall upon the local authorities by the operation of the Bill.

(4) That, in the opinion of this Association, it should be made a condition of the application of the residue under section one of the Local Taxation (Customs and Excise) Act, 1890, to the purposes of secondary education in general, that adequate provision shall first have been made for technical instruction, as was done in Clauses one (1) and two (1) of the Duke of Devonshire's Education Bill of last year.

(5) That this Association considers it desirable to amend the Bill by insisting that, when a Local Authority empowers a school board to continue to carry on any school or class under Clause 8 of the Bill, such school or class shall be carried on as a separate school or class and with separate accounts.

Assistant-Masters' Association.

It was explained by a deputation representing this Association, which waited upon Sir John Gorst, that the Association welcomed the Bill in that it proposes to constitute the county or county borough councils the local education authority, that it makes the residue of the Local Taxation (Customs and Excise) Act, 1890, applicable to education other than primary, and that it is designed to prevent competition between existing educational authorities.

The following resolutions have been passed by the Executive Committee of the Association:—

(*a*) Clause I., subsection 2, to read:—"Every such scheme shall provide that a majority of the members of the committee shall be members of the council, and that there shall be other

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members, male or female, not members of the council, *of whom some shall be persons having experience as teachers.*"

(*b*) That Clause I., sub-section 3, be amended in the same sense as sub-section 2 above.

(*c*) In Clause II., the application of the residue under section 1 of the Local Taxation (Customs and Excise) Act, 1890, to education to be made compulsory instead of permissive, as in the Bill.

(*d*) After Clause IV. the following Clauses from the Education Bill, 1900, be added: "A school shall not be deemed to be aided within the meaning of this Act by reason only that:—

(i.) Any scholarship or exhibition granted or supplemented under this Act is held at the school; or

(ii.) The use of any museum, laboratory, workshop or apparatus established or maintained or equipped, wholly or in part, under this Act, or the instruction given by any technical or scientific instructor paid, wholly or in part, under this Act, is available to scholars of the school equally with other students."

(*e*) After Clause IV. there be inserted Clauses IV. and V. of the Education Bill, 1900.

"IV.—(1) Every council shall make such reports and returns and give such information to the Board of Education with respect to their proceedings under the Local Taxation (Customs and Excise) Act, 1890, and this Act as that Board may require.

(2) Every council shall, in the exercise of their powers of establishing and aiding schools under the said Acts, have regard to the existing supply of efficient schools, and to the existing application of money applicable to purposes of education.

V.—(1) If the governing body of any school feel aggrieved at the action of any council on the ground that it acts unequally or unfairly with respect to that school, or is otherwise prejudicial to the school, they may complain to the Board of Education, and that Board, after communicating with the council, shall determine the matter, and the council shall comply with any order made by the Board of Education for removing the ground of the complaint.

(2) For the purposes of this section the expression 'governing body' shall include any corporation, trustees, or other persons managing a school."

Private Schools Association.

The following resolutions were adopted at a meeting attended by representatives of the Teachers' Guild, College of Preceptors, and Private Schools Association:—

(1) That it is in the public interest that an immediate survey of all schools other than elementary should be provided for by statute, and instituted by the Board of Education, with details as to accessibility, buildings, fees, number of school places, number and age of pupils, form of administration, number and qualifications of staff, &c., such survey being directed to ascertain how far the schools are *prima facie* suitable to the needs of the locality, and being distinct from such inspection as may be subsequently undertaken to test the efficiency of the teaching.

(2) That, in the establishment of new schools under the Act, regard should be had to the existing provision for secondary education, and that an appeal should lie to the Board of Education on the part of proprietors or governing bodies of existing schools.

(3) That Clause IV., 1 (*c*), of the Education Bill, 1901, be cut out.

(4) That provision be made for the inclusion, in each local authority, of an adequate proportion of persons—men and women—with experience in teaching in secondary schools.

The Incorporated Association of Headmasters.

The following resolutions were adopted by the Council of the I.A.H.M at a meeting on June 12th:—

(1) That this Council approves the Government Education Bill (1901) in general, and earnestly desires that it should be passed during the present Session.

(2) The Council would, however, welcome the introduction of amendments in the Bill to the following effect:—

(*a*) *Powers.*—(1) That the powers to be assigned to the proposed education authorities should be further defined as regards provision of secondary schools and general control of secondary education within their areas. (2) That in Clause 6 (2) of the Bill the word "may" (line 3) be substituted for "shall," and after the word "college" (line 6) the following words be inserted, "aided by such Urban District Council."

(*b*) *Constitution.*—That the Bill should provide for the appointment upon the proposed education authorities of persons possessing special knowledge and experience in secondary education.

(*c*) *Agreements.*—That all agreements under which proposed education authorities may be empowered to provide for the conduct of higher-grade schools through the agency of school boards should require the approval of the Board of Education.

(*d*) *Safeguards (as provided in the Education Bill of 1900).*—(1) That the proposed education authorities, under Clauses 1, 4, and 6, should be required, in making further provision for education under Clauses 4 and 6 of the Bill, to have regard to existing schools. (2) That managers or governing bodies of existing schools should have the right of appeal to the Board of Education, in order to secure that the new education authority shall have due regard for the work of existing educational institutions.

(*e*) *Finance (as provided in the Education Bill of 1900).*—(1) That the residue under the Local Taxation (Customs and Excise) Act, 1890, should be applied to education and to no other purpose. (2) That Clause 4 (1) c. do not stand as part of the Bill.

THE "REVIEWS" AND THE EDUCATION BILL.

Whether, as some say, the Education Bill goes too far because it takes away part of the work of school boards, or whether, as others say, it does not go far enough because it does not provide one central authority for education for each district, it is clear to everybody that the Bill is attracting a large amount of attention and giving rise to a great deal of healthy, if not always intelligent, discussion. It is, we believe, the custom of secondary-school teachers to attach a considerable amount of importance to the views expressed in the leading monthly *Reviews* upon the topics of current interest. It will perhaps save them trouble, and give them a selection of these opinions in a convenient form for reference, if we bring together here the gist of some of these articles dealing with the Bill.

It is interesting to note that most of the articles are by experts whose experience has been gained more especially in connection with elementary education. What they have to say is not of smaller importance on this account, of course, but in estimating the value of their criticisms it is worth while to keep this in mind.

The Fortnightly Review.

Mr. Ernest Gray, M.P., who sits on the Government side of the House, contributes a series of criticisms of the Bill to the *Fortnightly Review*. He recognises that there is practical unanimity as to the need for one local authority to deal with all grades of education other than that of the University, and that the proposal to take the County Council or County Borough Council as the foundation for the new authority has obviously many advantages. But he does not agree that a simple Committee of the County Council is all that is required. He desires a composite body on which the county councillor, the school

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board member, the voluntary school manager, and students of various forms of education shall find seats.

He is very emphatic as to the incompleteness of the Bill. "Whatever conflict there has been in the past between the secondary and the elementary authority will continue. There will still be the temptation on the part of the primary-school authority to keep back children who ought to go forward; there will still be the temptation for the secondary authority to seize the children at too early an age. A proper gradation of the schools, the fitting of each one into its proper place in an organised scheme, will still be impossible. Nothing, moreover, is done to lift the voluntary school out of its poverty: nothing to improve the small school board: the problem of school attendance remains in the same unsatisfactory condition: one-third of the country still escapes any local charge for primary education: the school rate in one parish may be tenfold that which it is in the adjoining district: nothing, in fact, is done under the Bill to secure equal educational opportunity for all children, whether board or voluntary, nothing to bring about an equitable distribution of educational charges."

The fate of the Bill ought, in Mr. Gray's opinion, to depend on the answer to the question whether or no the new education authority is merely the old technical instruction committee with another name. He does not think it is. "The Bill would at least bring about not merely the enlargement of these bodies, but an enlargement which shall not depend upon the will of the County Council alone, but shall be in conformity with the desires of the district as a whole." "Viewed as a proposal for organising secondary education, and as the foundation for one single authority, it is a distinct step in the right direction." But, "completion is essential, and Parliament should continue what the Government has begun."

In conclusion, Mr. Gray maintains there are three courses open. "The country may impel the House of Commons to reject the present Bill, or accept it and wait for its completion, or take the present proposals and insert the necessary amendments." The last method is Mr. Gray's choice. "If the ratepayers and others who build up and command Parliament will but keep fixedly in mind during the next few weeks that, without an educated electorate, without a well-equipped people, the strongest army and the most powerful navy will be powerless to conserve our Imperial prosperity, then the passage of a materially improved Education Bill will be assured."

The Contemporary Review.

The Hon. E. Lyulph Stanley takes up the question in the *Contemporary*, and leaves the reader in no doubt as to his opinion. "If this Bill becomes law, the people, both in towns and in rural districts, but especially in the latter, must give up all hope of further progress in the schools available for the mass of the community, they will see them stunted and crippled through the jealousy of feeble schools, nominally secondary, but often inferior in all but the fee charged to the best board schools, and they will see the combination of this jealousy with clericalism and sectarianism carry out a successful conspiracy against the aspirations of those who look for brighter days for the people of England, which never needed more than now, in these days of keen international competition, the best, the broadest, the most popular and the most expansive system of public schools for the whole community."

An utterance such as this from an educationist of Mr. Stanley's experience comes somewhat as a shock, especially when given without the introduction of the arguments by which he arrives at the conclusion. But he maintains that it is "clear that the intention and purpose of the Government in 1896, and also, presumably, at the present time, is to create education committees which, when once the money has been voted to them by the Council, will act in substantial independence of the Council."

"The present Bill puts practically the whole power in the hands of the Board of Education. The Council may submit a scheme, and the Board of Education may approve it or reject it, or suggest modifications. But if the Board of Education withhold their consent for twelve months they then acquire the absolute right to frame the scheme by themselves. All they are bound to do is to provide that a majority of the members shall be members of the Council. The Bill does not even say that they must be members elected by the Council. Thus, with a Conservative Board of Education and a Conservative County Council, all may go smoothly; but suppose a Radical Council in a town like Leicester or Halifax. If the Board of Education objects to the scheme submitted, they may, at the end of a year, frame a scheme in which they may nominate the members of the Town Council, and add any persons they please to represent, as Sir John Gorst twice said was intended, the various 'interests' of the district—'interests' being probably hostile to any expansion of education which might clash with those interests."

Discussing the financial provisions of the Bill, Mr. Stanley says, "This year the money (that is the whisky money) is merely applicable; that is County and County Borough Councils are free if they please to apply a whole or part, in relief of the rates. Surely the least that should be done, if we are in earnest in creating new authorities to develop higher education, is to require that the whole of this fund shall necessarily be applied to this purpose."

Speaking of the Cockerton judgment, it is argued that nothing will meet the present deadlock short of a Bill of one clause, authorising school boards which, during the session preceding the passing of the Act, have conducted schools declared illegal by the recent judgment, to continue those schools for one year, and for another year if authorised by the Board of Education, pending the settlement by a well-considered Bill of all the questions raised.

The Empire Review.

Sir Charles Elliot, the Chairman of the Finance Committee of the London School Board, has undertaken the task of criticising the Bill in the *Empire Review*. He is "forced to conclude that the Government has failed to realise the real meaning and effect of the Cockerton judgment, or to apply any effectual remedy to the difficulty thrown by it in the way of educational advancement. It is impossible to believe that Parliament will agree to Section 8 of their Bill, and they would be well advised to adopt the simple clauses . . . which would settle once for all the questions which have been raised, and would place elementary education on a firm and clear basis."

These simple clauses are contained in a brief amending Bill, which Sir Charles suggests, to provide

(1) That the Whitehall Code shall be the authority for all instruction in day and evening elementary schools, and shall be sufficient to legalise any expenditure incurred in such instruction.

(2) That there shall be no superior limit of age for students in evening schools, the lower limit being fixed at the period when compulsory attendance at a day school ceases.

As to the new proposed authority for secondary education, intended eventually to supersede school boards, and to supervise all grades of education, Sir Charles Elliot thinks there are two radical objections to the proposal. First, the physical impossibility that the bodies to be constituted can cope with the whole of the work; and secondly, in the unsuitability of the bodies constituted in the manner set forth in the Bill for carrying out the work.

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The "whole attack on *ad hoc* election seems to me an instance of the curious way in which the British public is occasionally captivated by a phrase, and runs about using it, without reflecting on its truth or precise meaning . . . But what other ground of election or selection can there be than that of special fitness for the object aimed at? If you choose a wife you choose her *ad hoc*, on the score of her supposed suitability for the position . . . The ordinary accomplished man of the world can go on to the County Council, and in a few weeks or months can master what is needed to be done on its various committees, but the organisation of the board schools requires a longer training."

The conclusion to which this article points is that the Government Bill should be remodelled as to Clause 8, so as to deal intelligently with the defects in the law revealed by the Cockerton judgment, that for London and the County Boroughs the school boards should be maintained, and the educational committees should deal only with secondary instruction, but that in rural counties the new authority should supersede the small school boards, and should control both primary and higher education, the larger counties being subdivided so as to provide that the areas are not too extensive for proper supervision, local knowledge and efficient control.

The Nineteenth Century and After.

Whatever the Editor of the *Schoolmaster* says, he says emphatically. There is little chance of misunderstanding Dr. Macnamara, M.P., in his short contribution to the *Nineteenth Century and After*, dealing with the Bill. "What is needed is a statesman with a head big enough to sweep all this hotch-potch (the numerous existing authorities for education, that is) away, and to give us . . . in each locality of suitable area one paramount authority responsible to the people and supervising all the grades of schools within its area."

He has not a very high opinion of the proposed new committees. "The Bill . . . follows the 1896 scheme of municipalising education in the constitution of the new local education authorities which are to be. These authorities are simply the technical instruction committees already in existence furbished up like the Thames steamboats with a new coat of paint and made to look like something very imposing and very effective."

He does not go so far as Sir Charles Elliot in the matter of *ad hoc* bodies, but where localities prefer an authority of this kind he would let them have it. "I suggest that if the municipal council of any borough, so far from desiring to take on new educational functions, wishes to divest itself of those which it already possesses, and with the approval of the ratepayers appeals for an education authority elected *ad hoc*, the Bill ought to make such provision as would render this possible."

Dr. Macnamara makes three points against the Bill:

(1) "That it does not give a locality the right to have an *ad hoc* authority for education if it desires the same."

(2) "That by keeping the control of primary education apart from the control of secondary and technical education it adds confusion to chaos, multiplies the means of overlapping and extravagance, and does nothing to reduce local friction and animosities;" and

(3) "That in its financial proposals it ludicrously underestimates the vital importance to the people of this country of education as a means of national defence and commercial advancement."

As would be expected, Dr. Macnamara has something to say about the Cockerton judgment. "It would have been better simply to have given us this session a short enabling Cockerton Bill, leaving out the very difficult problem of the constitution of an effective local authority for the more deliberate consideration of next year. The present session is already far advanced; its work is of an exceptionally heavy character; and if the present Bill is to be got through at all it must necessarily be rushed and closured in a way that will certainly not make for educational harmony and will certainly commit us to provisions which will not tend towards the advancement of popular education along sound and progressive lines."

ITEMS OF INTEREST.

GENERAL.

THERE seems a possibility that science may be excluded from the Matriculation examination of the London University in the near future. That such a thing should be even contemplated in connection with the people's university seems incomprehensible. Has Huxley's teaching had so little effect? Do the Senate see what would be the effect of such a regulation upon the curriculum of the secondary schools of the country? After years of strenuous endeavour men of science were beginning to imagine that they had secured a recognition of the claims of science to an honoured place in school time-tables. Not of any one branch of science, be it remarked, but of a training in the scientific method, than which no better way of developing the intelligence of our children has been discovered. To remove from the syllabus of the Matriculation examination all references to the necessity for an experimental training in the broad principles of physical and chemical science for all classes of students, whether they intend to specialise in Arts, or Law, of what not, is tantamount to ensuring the disappearance of such work from many secondary schools throughout the country, for this examination has come to be regarded as the "leaving" examination of most schools of this class. At present the position of science in many secondary schools is so insecure that where classical and mathematical conditions predominate the authorities will jump at this opportunity of freeing themselves from a duty they have always regarded as irksome. We hope the protests of Prof. Armstrong and others will prevent so undesirable a contingency.

IN a recent Blue Book dealing with the work of training colleges in England and Wales for the year 1900, Mr. G. Rankine, one of his Majesty's chief inspectors of schools, provides an abundance of information respecting the equipment of our elementary teachers for their work. One of the foremost things brought into prominence is the deeply-engrained feeling in the practical English mind that there is no science of education, and that very little preparation is required for the practice of the art. "Large classes under untrained teachers would hardly be tolerated as they now are were it not for the idea that elementary school-children need to be kept in order rather than instructed," says the official publication. The high importance attached to cast-iron discipline is, unfortunately, not confined to public elementary schools. So long as secondary schoolmasters come to their high calling with no preparation for their duties, so long will headmasters have to insist in the first place upon the order in the forms of their schools. But with some preliminary instruction in the art of teaching the assistant-master would begin to appreciate the fact that where the teacher looks after the interest of the lesson the discipline can be left to take care of itself.

MR. RANKINE has to refer again to the meagreness of the accommodation in the training colleges. Elementary teachers differ from their secondary-school colleagues in one important respect. Whereas the former earnestly desire to be trained, but in a large number of cases, though duly qualified, cannot

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get into a training college because there are not places enough for all, the secondary schoolmaster is encouraged, by the action of the authorities of the kind of school where his work lies, to believe that training is not only unnecessary, but has a tendency to kill originality and interfere with freedom and elasticity in the performance of his duties. But this latter spirit is dying, and before long it will be everywhere recognised that a few years given to the study of the scientific method as applied to education so profoundly modifies our present amateurism, and does so much to ensure the education of our sons and daughters in a manner that will enable them to perform their work in life with intelligence, that it will be insisted upon for all.

WHILE training colleges for secondary schoolmasters are almost unknown, a number of institutions where secondary schoolmistresses are initiated into the mysteries of the class-room have been doing useful work for some years. One of these is the St. Mary's College, Paddington, the claims of which to public support were urged at a recent meeting presided over by the Bishop of Southampton. The College has been established for four years, and is recognised by the London Technical Education Board for the purposes of technical education. Sir Richard Jebb, in supporting the plea for further support, gave, at the meeting, an outline of the work of the numerous departments of the college, and explained how it was proposed to extend the system of training women teachers for the secondary schools of this country and the colonies.

THE plan adopted by the Principal of the Datchelor Training College of sending out a list of senior division students of the college, most of whom are seeking posts in September next, seems to be an excellent one. It is quite easy from this list to see at a glance the qualifications and the essential facts concerning the education of the ladies who have completed their course of training. The Principal rightly points out that the training received at this training college is both practical and theoretical. Not only has each senior student given on an average 120 lessons under the guidance of the college staff, but has also studied the science of education with the assistance of a highly-qualified body of experts. The Mary Datchelor Girls' School, with which the college is connected, affords the students in training unusual facilities for actual practice in teaching.

READERS of Mr. H. G. Wells's "La Belle Dame sans Merci" will have much sympathy with Mr. Davidson, who lives within a stone's throw of the Queenswood School for Young Ladies at Clapham Park. Those of us who have been resident masters know the effect on the nerves of those music practices. Have we not many times rushed out into the rain or snow to avoid the exquisite anguish? But the consideration that it is one of the drawbacks of the profession has partly restrained our fury. But Mr. Davidson has no such brake to apply. He made for the law courts instead. He evidently hoped the law would define music practices as a "nuisance," but he has been disappointed. "The various trades and employments of this vast metropolis must be carried on, although roses may cease to bloom in the Temple," said Lord Justice James, and Mr. Davidson has had to content himself with the promise of the school authorities to restrict music practices to reasonable hours and to prevent the sounds from escaping as much as possible. Of course music practices are a necessity, and, though we sympathise with Mr. Davidson, we do not see how the young ladies could by-and-by grace drawing-rooms without going through the necessary training, even though it should wear out the patience of a few neighbours.

THE fourth annual report of the Childhood Society, being the record of the work done during the year 1900, is before us. It seems that the total number of members on the register is fifty-eight, fifteen having been elected during this period. Two courses of lectures were held during the year, and the council are again able to record an increased interest in the work of the society. In addition to other labours, the society has presented a memorial to the Local Government Board urging that, in future legislation promoted by the Local Government Board, charitable institutions for the training of defective and epileptic children should receive consideration similar to that promised by the Board in the case of institutions for imbeciles and idiots. Full particulars as to the objects of the society can be obtained from the Hon. Secretary, Mr. W. J. Durrie Mulford, at the Parkes Museum.

THE new section of Educational Science, which will be inaugurated at the meeting of the British Association, to be held at Glasgow in September, makes the meeting of exceptional interest to teachers. The section will be opened with an address by the President, Sir John Gorst, on the morning of Thursday, September 12th, and the afternoon will be devoted to descriptions of educational work in Glasgow. On the following day various aspects of educational science will be discussed. Monday, September 16th, will be given to the consideration of the teaching of mathematics, and Tuesday to the influence of universities and examining bodies upon secondary schools. It is hoped that the various educational associations and public examining bodies will nominate delegates to attend the meetings of the section and represent their views. Committees will probably be appointed to report upon some of the subjects brought forward, and it is important that they should have a comprehensive constitution. Moreover, there is little doubt that the expression of the section will be accepted as reason for future action in connection with the subjects discussed, so that those who represent conservatism in education should take part in the discussion as well as those who are for reform. The Vice-presidents of the section are Prof. H. E. Armstrong, Rev. G. C. Bell, Dr. J. H. Gladstone, Sir Henry Craik, Prof. L. C. Miall, and Prof. J. Perry. The Secretaries are Prof. R. A. Gregory, Mr. W. M. Heller, Mr. R. Y. Howie, Dr. C. W. Kimmins, and Prof. H. L. Withers.

THE Education Committee of the General Medical Council presented a report at the proceedings of the summer session on the steps taken for raising the standard of preliminary examinations. With the assistance of Professor McCormick, the committee has come to an understanding with the authorities of Oxford, Cambridge, and Durham as to the enhanced requirements which, after January 1st, 1902, would be enforced in respect of their respective examinations. The new conditions proposed by the Oxford Local Examinations Delegacy and the Cambridge Local Examinations Syndicate mark a considerable advance in the standard of attainments required of candidates who seek to qualify for the students' register by means of those local examinations.

A TRANSLATION of the Decree of the French Minister for Public Instruction dealing with the simplification of French syntax has been prepared for the Special Inquiries branch of the Board of Education by Mr. W. G. Lipscomb, M.A., Assistant Master at University College School, London, and Hon. Sec. of the Modern Language Association. The pamphlet costs a penny, and can be obtained from Messrs. Eyre and Spottiswoode.

SIX hundred and seventy-eight candidates entered for the Cambridge Higher Local Examination in June, which was held at twenty-one centres. The new Regulations, which contain the announcement of set subjects in the various groups for

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December, 1902, and June 1903, as well as for December 1901 and June 1902, can now be obtained from the local secretaries or from Dr. Keynes, Syndicate Buildings, Cambridge. Changes have been introduced in the regulations for the natural science group.

SCOTTISH.

The Scottish School Board Association at their last meeting came into line with other educational authorities in condemning the entire want of uniformity in the Merit Certificate examinations in different parts of the country. It was agreed to make representations to the Department on this point, and at the same time to call attention to the impossibility of the certificate serving satisfactorily a dual purpose—the leaving certificate of the elementary schools and the passport into secondary schools. A resolution was also passed calling for the improvement of the Teachers' Superannuation Act. It is exceedingly satisfactory to find an Association representative of the ratepayers of nearly all Scotland recognising the unfairness of the present Act, so far at least as existing teachers are concerned. The advocacy of such a body should aid teachers most materially in their endeavour to improve the Act, and should give them fresh heart in their cause.

The Aberdeen County Committee on Secondary Education have just issued a circular to teachers within the county stating that they propose to institute scholarships in modern languages for the benefit of teachers actually engaged or likely to be engaged in this branch of work. The intention is that the selected candidates should proceed during the summer vacation to educational centres in France or Germany, and there perfect themselves in the language as it is used in social intercourse and business relations. The vacation time at the disposal of teachers is so limited that the Committee have exercised a wise discretion in limiting their selection to those actually engaged in teaching modern languages or who already possess a good working knowledge of them in their literary form. The scheme for a year or two will be purely tentative, and the development and continuation will largely depend upon the measure of success obtained during these years. The County Committee, however, need have no fear on that score. Their policy is a most original and enlightened one, and not only deserves success, but will command it.

WELSH.

The Central Welsh Board of Intermediate Education have now had placed in their hands the administration of the funds under the Science and Art grants. It has been decided that the county governing bodies should be advised to request the Board of Education to hand over to them the distribution of the grants to particular schools in their county. If this is done, as would appear to be probable, grants will not be paid over directly to the particular schools on the result of examinations as "earned," but will be distributed among the different schools in the county, according to the need of each. Examinations and inspections in science will be under the control of the Board, as is the case with the general examinations and inspections. These Science and Art grants will make a very considerable addition of funds for the purpose of increasing the efficiency of the schools. It is estimated that from £10,000 to £12,000 per annum will be thus placed at the disposal of the Central Board.

It is hoped, however, that the county governing bodies will be willing to place aside from this fund some £3,500, so that the Central Board may organise a pension fund for the teachers in the intermediate schools. According to the scheme discussed at their last meeting by the Board, teachers would be expected themselves to contribute in the aggregate about £2,200. The pension aimed at is 50 per cent. of the average salary received during the last five years of service. Retirement is proposed to be compulsory at 65 years of age. There are special provisions as between the ages of 60 and 65 years, dependent on the state of the fund. If this scheme can be carried out, it will at least have the merit that it will not call for any further rates or taxes, but, as Mr. W. J. Russell, chairman of the Welsh County Teachers' Association, has said, "the means will be drawn from a fund the amount of which will largely depend on the diligence and enthusiasm of the teachers themselves."

At a meeting of the governors of the County School at Holywell it was urged that the omission of the teaching of music interfered with the popularity and efficiency of the intermediate school, and naturally caused some parents to send their children elsewhere. The headmaster stated that music was taught at a large number of Welsh county schools, but that it was taken out of school hours. The matter was referred to a committee. Seeing that the Welsh are so fond of music, there seems to be good reason why music should be a subject of their education, but there is considerable practical difficulty in placing it upon the subjects in the regular curriculum.

Mr. William Evans, at an Eisteddfod held at Dolgelly, stated that in the twenty years between 1871 and 1891 there was a decrease of 10 per cent. in the number of those resident in Wales who were able to speak Welsh. The number able to speak Welsh in the Principality in 1871 was 1,006,100 and in 1891, 911,289, in spite of increase in population. This decrease, he pointed out, set in after the Elementary Education Act of 1870. He compared the schools in Belgium, on which Mr. Dawis has lately made a report. There the children are taught both Flemish and French. He concluded, from the example of the Jews, that their linguistic ability had helped to make them better traders, and urged that, even on the lowest grounds, the bi-lingual training of children in schools should be insisted upon.

At Denbigh the county governing body have been considering the resolution of the Association of Headmasters and Headmistresses of Welsh county schools deploring the attempts to establish or perpetuate in the Principality such higher-grade schools as provide another system of secondary education in addition to that already established under the Welsh Intermediate Education Act. Evidently, if the new Education Bill should become law, the county authorities in Wales would be able to take the matter into their own hands. It was agreed by the Denbigh county governing body to defer the discussion raised until the Bill before Parliament had been settled.

IRISH.

In the Report of the Ulster Royal Schools for 1900, just issued, a comparison is given between the state of the schools before the commissioners appointed under the Act of 1885 took over the management in 1891 and their present state. There were formerly five Royal schools, all Protestant, with, in 1891, a total income of £4,154 and in all only 217 pupils. The teaching and equipment in some of the schools was very inadequate. Under the old constitution the commissioners could pay visits, but could not examine or officially inspect. The commission of 1885 was appointed to hear evidence and try to make existing Irish educational endowments more useful. The commissioners drew up a scheme for the endowment under

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which ten schools were established in the districts, five Roman Catholic being added, and in each district two local boards, one Protestant and one Catholic, for their management. Certain conditions of efficiency and equipment were laid down, and the commissioners were empowered to examine and inspect. The income available for the schools has been decreased to £3,436 in 1900, chiefly owing to the decline in rents, but also to the pensions given to some retired headmasters. This latter will cease with the pension holders. The number of pupils is at present 582, there being a slight decrease since 1899. The education given is very much improved, some of the Royal schools, such as Portora, being among the best in Ireland. The efficiency, as tested by the intermediate examinations, compares well with other Irish schools.

THE Report of the Board of Intermediate Education for 1900 shows that the income of the Board was over £100,000, and exceeded the expenditure by £11,315. The amount of result fees paid to managers in 1900 was:—boys, £41,097 10s. 10d.; girls, £15,006 7s. 4d., or a total of £56,157 18s. 2d. 5,314 students passed the examinations. There was a decrease of 2·1 per cent. in the number of students presenting themselves (7,608), a decrease due largely to the rule raising the minimum age at which preparatory-grade students can present themselves—a rule established in 1898. The decrease from this cause was much larger in 1899. The percentage of passes was 69·8, the highest yet reached. It was 68·3 per cent. in 1899, and 62·1 in 1898. The increase is largely due to fairer and more rational questions having been set owing to public criticism.

THE examinations for this year began on June 10th and lasted about a fortnight; they are the last examinations on the old lines. The new scheme, with the changes for 1902, was issued in the middle of June, and its provisions are noticed in another column.

CURRENT HISTORY.

MANY people in England and France thought in the years 1861-5, that the Southern States of the great North American republic would make good their endeavour to dissolve the union and that there would thus be two hostile and feeble republics, whose opinions might be neglected in international matters. Revolutions had been happening in Mexico, and the government there was in debt to many Englishmen and Frenchmen. Accordingly an Anglo-French expedition was sent to enforce the payment of these debts much in the same way as the same two powers intervened in Egypt. The Emperor Napoleon III. had further ideas, and in 1864 he induced Maximilian of Austria, a brother of the present Emperor, to accept the crown of Mexico and to found an empire there under French protection. With this England would have nothing to do, and, when the American Civil War was over, the (once more) United States, applying the doctrine which Canning of Great Britain had established and which Monroe of the United States had adopted, demanded that French intervention should cease. Accordingly in 1866, as pictured in *Punch's* cartoon, Napoleon was compelled to let Maximilian fall over the precipice on the edge of which he was struggling. He was captured by his republican enemies and, in reprisal for the shootings to which he had condemned his prisoners, was himself shot—June, 1867. Since then, naturally, Mexico has not been on friendly terms with Austria-Hungary. But now the story is to be buried and forgotten. The President of Mexico has erected a *chapelle expiatoire* in that country to the memory of Maximilian, for which the Emperor Francis Joseph has sent a picture to be placed over the altar.

"THE Supreme Court of the United States of America has decided that the War Revenue law imposing taxation on export bills of lading is unconstitutional." How our coalminers and owners, our sweetmeat manufacturers, and our payers of income tax would rejoice if a similar bit of news could be possible in this country. But, alas for them, *our* Parliament is almighty, nay, in matters of finance, our House of Commons is almighty, and when once the House has assented to the Budget, no law court will grant relief. Nothing that Parliament does here *can* be "unconstitutional," much less illegal. There, the wise fathers of the constitution foresaw the dangers of a Parliament that can, as Cromwell said, make a law one day and unmake it the next. And in 1789 they laid down the limits of its powers. So is the will of a living Parliament curbed by the will of founders dead more than a century ago. And this, too, is a land where "all men are born free and equal"—even negroes now.

OUR readers may remember reading, some months ago, of the Dukhoborski and their troubles in Russia. They are folk who object to war, state churches, and other institutions of modern European civilisation. Some of them emigrated recently, with the help of friends, to Canada, under the "free" constitution of which country it was hoped they would find rest from the per-/pro- secution to which they were subjected in their native land. But now we hear that "they have risen in revolt against some of the laws under which they find themselves situated." They "ask for an asylum where they will be free from the 'tyranny of the Canadian laws.'" They "object to the land-tenure regulations, as well as to the marriage, divorce and registration laws . . . They prefer communal instead of private ownership, and all the laws which they object to they declare to be irreconcilable with their religious views." And thus Canada is faced once again with the eternal Sphinx riddle that has tasked the wits of Western Christendom throughout its whole existence—the relation of church and state. What shall be done when the state makes a law, and a subject says it is contrary to his conscience to obey that law, as, for example, happened recently at Gloucester, where, a "Friend" (Quaker) refusing to pay income tax, on the ground that all war is wrong and that the increase in this tax was due to abnormal military expenditure, his goods were sold by distraint and were bought in by his co-religionists? The solutions have been either what we have ventured to call "per-prosecution" (the prefix being chosen according to our sympathies), or toleration, or "establishment." In the first, the State wins; in the second, there is a drawn battle; in the third, the Church wins. To illustrate the matter would be to tell the history of Europe.

COUNT TOLSTOI has been excommunicated by the authorities of the Greek Church. And there has been much indignation thereanent, at which we personally take leave somewhat to wonder. If a member of the Carlton Club were to become a Radical and Home Ruler, should we be surprised if he were to be expelled? And though Tolstoi has perhaps wandered not so far from the dogmas of the "Orthodox" Church as to complete the analogy, we are somewhat puzzled to know why he should even wish to remain a member of the community with which he has so little in common. When William III. of England wanted to "comprehend" all Englishmen in the one Church of his day, it was found impossible to widen the terms of admission far enough to include all without making the institution valueless for those who were content with things as they were before. The indignation of Tolstoi's friends is comprehensible only if we suppose that in Russia, because of the close union between Church and State, excommunication spells also "outlawry," as it did in England before 1689.

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EDUCATION AND THE EMPIRE.[1]

By CLOUDESLEY BRERETON, M.A.

IN 1897, after the celebration of the Queen's Jubilee, it was decided that steps should be taken to prepare a series of Reports on Colonial Education. Some twenty-two colonies were approached. They included all the North American and Australian colonies, together with the Cape, Natal, British Guiana, Jamaica, Ceylon, and Malta. A later volume will include accounts of the tropical and sub-tropical colonies of Mauritius, the Straits Settlements, Hong Kong, and our West African possessions. The only important omission is India, whose educational system may be studied in existing publications of the Indian Government. To ensure a certain similarity in the form and scope of the various reports, a certain number of heads of inquiries were sent out to the different colonies. Information was asked as regards the history of education in the colony, the constitution of central and local authorities, the numbers of pupils and students, and the regulations as regards school attendance and the method of putting them into force. Finance was also fully dealt with. Questions were addressed on the different quota contributed, as might be, by the state, the locality, and the parents. Nor were the private schools ignored by the inquiry. The vexed question of inspection and the recruitment of the inspectorate formed another subject for investigation. Other equally important chapters of inquiry were those which dealt with manual and physical training, with the religious question, the appointment, salaries and status of teachers, the problem of free meals, continuation and evening classes, the provision for higher and university education, and the extent to which it was subsidised by the state; technical, commercial, and agricultural instruction, reformatories and industrial schools, and instruction for those who start unfortunately penalised in life's handicap, the blind, the deaf and dumb, and the mentally defective.

The mere enumeration of these different headings is instructive as showing and helping us to realise that the problems of our kindred across the sea are exactly the same as those which are, many of them, causing much commotion in England to-day. In fact, we may do worse, when seeking for light on our own difficulties, than turn to the present Reports and see how this colony and that have handled the problems as they have arisen. These things are written for our learning quite as much as for the colonies themselves. One of the most prominent features of the reports, according to Mr. Sadler, is a great and growing interest in education throughout the Empire. Variety in system and organisation is another striking point. We have never sought, like the French, to impose a certain home-bred form of education on our colonies; on the contrary, they have been allowed to develop and build up whatever system seemed best suited to their own particular circumstances. Now, however, there is a growing sentiment among the colonies that this rich and varied experience should be utilised as far as possible.

These two volumes are, we hope, only a beginning towards the establishment of an Imperial Bureau of Education, whose facts and statistics may be alike at the service of the colonies and the mother country. Another characteristic is the increasing distrust of mere bookish knowledge as apt to create *déclassés*, and a quickening consciousness of the importance of technical and manual training. Other points of note are the comparative failure of existing methods of native education. The untutored savage seems to be little improved by the acquirement of reading, writing and cyphering. In fact, his last state is probably worse than the first. And lastly, it is curious to note that the supply of higher, and especially of secondary, education is deficient in many of our colonies. There seems to be a great lack of schools providing education on the lines of our great public schools. The want of endowments for secondary education has not so far been adequately compensated for in the colonies by the State. Too much has been left to private venture.

Coming to the colonies themselves, the account of education in Ontario is highly interesting as the account of a thoroughly efficient and well worked-out system. That of Quebec brings us at once into the midst of the religious question, complicated further by racial differences. The *modus vivendi*, however, on which the schools are conducted is equally honourable to both parties. Protestants and Catholics alike must contribute to the school rate, but they have the right to "ear-mark" their contributions in order to show to the support of which type of school they desire to contribute. In Manitoba the religious question has probably appeared in its most acute form. The strife waxed very hot for a time; even the Pope had to intervene, but, according to the *Tablet* of October, 1898, the rights of small Catholic minorities to have a school of their own, when sufficiently numerous, seemed at that date in a fair way of being granted.

The historical sketch of education at the Cape is very interesting. The first school, not for Europeans at all, but for slave children, was started by a rich visitor (*sieckentroosies*) in 1656. It is worthy of remark that when the French Huguenots arrived in the colony, their children, the forefathers of the present Delareys and Du Toits, were instructed in French, till directions were received from Holland towards "killing" the language. The taking of the colony by the English introduced anew the language problem, which has been further complicated by the arrival of German colonists, while the education of the natives raises the additional question of teaching being carried on in Kaffir and Sesuto. The solution of the language which should form the medium for the bulk of the child's instruction depends largely on the prevailing language of the district. But in any case English is always taught as a main or a bye subject.

The weak spot in the Australian colonies seems to lie in their university and secondary education. It is only fair to Victoria to point out that, owing to the commercial crisis from which the country has only just recovered, the most rigid economy had to be practised in all departments of State, not excluding that of Education, which is generally one in which little retrenchment which is not harmful can be practised. The total expenditure on education sank from nearly £900,000 in 1890-91, to about £600,000 in 1896-7! Grants were cut down wholesale. Melbourne University, which received £12,800 in 1890-91, only received £3,250 in 1896-7.

Much of the most valuable parts of the Reports is contained in the small print and appendices. Especially informative are the extracts from the so-called progress reports of the Royal Commission on Technical Education in Victoria. That on the efficiency of the educational system might well be studied by our English authorities. A point that was agitating the same colony at the moment of the drawing up of the Reports was the question of Scripture lessons in State schools. Highly significant extracts of evidence given on the subject are embodied in the Report. We notice that Tasmania, which someone has nick-named an Australian Sleepy Hollow, has not yet freed its primary education, though the fees of necessitous children are paid for by the State. South Australia attempts to give its primary teachers a University training—a truly admirable idea. New Zealand teachers also enjoy a teacher's court of appeal—another point we should do well to copy. Ceylon is doing a great work in attempting to carry out the education of natives

[1] Board of Education: Special Reports on Educational Subjects, vols. iv. & v. "Educational Systems of the Chief Colonies of the British Empire." [ed. 416] 4s. 8d., [ed. 417] 4s. 1901.

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to a certain extent on native lines. Jamaica has gone in strongly for agricultural education as recommended by the Royal Commission, which promises to do much for the future prosperity of the island. In Malta the great burning question is that of the Italian language. The Italian Irredenta party are fighting hard for its retention, but, according to the *plébiscite* taken among the parents and guardians of the pupils, some 98 per cent. are in favour of English being taught in preference to Italian. The language of Malta, corruptions apart, is, of course, really a Semitic dialect.

Such are only a small tithe of the interesting points with which the Reports teem. We only regret that the Board of Education should have issued the two volumes simultaneously. Few persons have time to read through 1,600 pages. Again, it would be a great improvement if such books could be produced in a bound form. Their very bulkiness causes them to tumble to pieces if they are subjected to any constant use. The plainest of cloth boards would be preferable to the present flimsy paper covers.

THE RELATIONS OF GEOGRAPHY AND HISTORY.[1]

MR. GEORGE, in his opening words, sketches the outline of which the rest of his book fills in the details. After insisting on the extreme modernness of exact geographical knowledge, he proceeds to discuss and illustrate "the general nature of geographical influences" under four main headings:—

(1) Physical features are permanent, while frontiers vary.

(2) They very largely govern the beginnings of history.

(3) They affect the destiny of nations after they have been formed.

(4) It is only late in history that human labour can avail to modify their influence, and at most this can only be done to a small extent.

The next six chapters (iii.-viii.) deal with Frontiers, Towns, Nomenclature—in connection with which he mentions his indebtedness to Canon Isaac Taylor, but does not allude to Mr. Joyce's books on Irish place-names nor to Mr. Round's more recent paper on the subject—"Fallacies of the Map, Sea Power in Peace and War, and Geography in War." A comparatively long chapter traces the outlines of Europe clearly and pleasantly and with two well-drawn maps by Mr. B. V. Darbishire, who seems to have received a semi-official appointment as cartographer to History dons at Oxford. The rest of the book—with the exception of a somewhat slight chapter on America at the end—is occupied with a fairly detailed consideration of the historical geography of Europe according to the following "natural" divisions: British Islands, France, the Spanish Peninsula, Italy, the Alpine Passes, Switzerland, the Rhineland, the Baltic Region, the Danube Basin, Theatres of European War, the Mediterranean Basin.

This summary of the contents shows that the book is orderly and well arranged, that it contains much matter not readily accessible elsewhere which will be eminently useful to the general teacher, and that Mr. George's conception of Historical Geography is somewhat wider in its scope than that adopted in Freeman's two volumes, now (alas!) out of print. And those who are acquainted with Mr. George's previous work will know that anything coming from his pen is pretty sure to be helpful and suggestive. He has always stood "far from the madding crowd" of text-book makers, and has preferred to give us books that we really need. His "Genealogical Tables," his "Poems of England," and his "Battles of English History" are each in their several ways not so much the best as the only books available. Anyone can turn out a text-book to order, but it requires a certain amount of insight to see what is needed to supplement text-books, and a considerable amount of faith in human responsiveness to set about meeting a "need" which is only too likely not to be a "felt want."

But though we are beholden to Mr. George for his happy thought, for several hours' reading which pleasantly blend interest with instruction, and for a valuable addition to our five-guinea "Library of English History," we have one or two little growls to make. Mr. George has put forth many fruitful ideas, but he has seldom told us where we may most profitably turn if we want to see them worked out more completely than his space permits; we cannot think that this omission of bibliographical apparatus is anything but a blemish, or that the blemish is rendered more acceptable by its frequency in English books. Secondly, we think it is a pity that Mr. George has permitted himself certain popular and misleading loosenesses of terminology, especially in the much-abused words, "race," "people," "nation," and "nationality." When he is continuously thinking about the subject he is careful to use the term *race* in a scientific sense, but at other times he lapses into the time-honoured confusion between race-names and language-names. It is difficult, for example, to see what good end is served by speaking of Teutonic and Keltic "races," and we are at a loss to understand what precise meaning can be attached to the phrase "the English race."

CLASSICS IN THE SECONDARY SCHOOL.[1]

THERE is much of value and interest in this book, although the proportion is somewhat out and the execution uneven. But there can be no doubt that its publication is timely, when we are in danger from the so-called "modern" education, which bears the same relation to the true science as the higher-grade board schools do to the work of Thring, disregarding tradition entirely, having a single eye to produce wage-earning creatures and eagerly receptive of the newest theories. Prof. Bennett wisely devotes a section to justifying the teaching of Latin, in which he shows conclusively that it is unique as an instrument of mental training, and cannot be replaced by modern languages, by English, by natural science or technical instruction. It is encouraging to find that in America its value has been recognised by a kind of instinct, so that the number of learners has increased enormously of late years. Prof. Bennett is also severe on the pretentions of the "inductive method," which, he points out, has the effect of making a pupil generalise from single instances. The parrot method of learning French and German is also demolished as an educative agent; both he and, in a less degree, Prof. Bristol are sceptical as to the value of modern "improvements" in method, and Prof. Bennett points out that since grammar has ceased to be thoroughly learnt the memory has been neglected, and the expected result, ability to read with understanding, has not been attained. Exact knowledge and habits of accurate thought are the objects which both writers aim at, and they rightly say that a child may learn these without any great readiness either in reading or writing Latin and Greek. We should like to have criticised some points; for instance, the choice and sequence of authors, the pronunciation of Latin, the depreciation

[1] "The Relations of Geography and History." By the Rev. H. B. George, M.A. Pp. viii.+296. 4s. 6d. (Oxford: at the Clarendon Press.)

[1] "The Teaching of Latin and Greek in the Secondary School." By C. E. Bennett and G. P. Bristol. 336 pp. (Longmans.) 5s. net.

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of parsing, and certain inconsistencies between the two parts of the book, but we must content ourselves with saying that there is a good deal of detail which has no place here. We do not look in a book of this sort to find what chapters of Xenophon's "Anabasis," Book I., may be omitted in class work, or the pronunciation of naturalised Greek names in English, or what words to discuss in a given passage of Homer. We look for principles. However, when all is said, it is a suggestive and, generally speaking, a judicious book.

RECENT SCHOOL BOOKS.

Modern Languages.

Voltaire, Contes et Mélanges. Edited by F. B. Kirkman. xxix.+159 pp. (A. & C. Black.) 2*s.*—The editor is mistaken in thinking that the shorter prose writings of Voltaire have not been edited for English readers; Mr. Roget prepared a very good selection which was published in 1894. The book before us is "primarily intended for middle forms and for rapid reading in upper forms." The choice is not a happy one. The whole spirit of Voltaire is alien to the spirit which we desire to foster in the boys and girls of middle forms; and *Jeannot et Colin* (also to be found in Mr. Roget's book) is the only story of the selection we should care to read with a class. The method to be employed is suggested in an indifferently written preface; there is no life of Voltaire; the notes on the subject matter are too condensed. The *exercices oraux* might be better arranged; and the introduction of English words is to be regretted. There are several full-page illustrations, the conception of which is better than the execution.

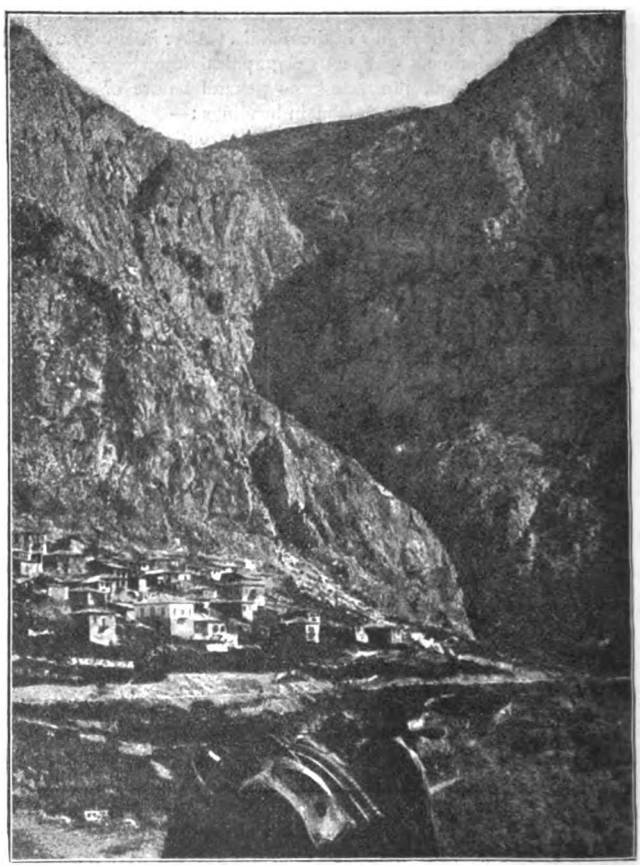
George Lamy, Voyage du novice Jean-Paul. Edited by D. Devaux. xviii.+148 pp. (Macmillan.) 2*s.*—A good addition to Siepmann's Series. The story tells of a visit to the cod fisheries of Newfoundland, and to Canada (Quebec, Montreal and the North-West). It thus serves the double purpose of teaching our pupils French (the style is simple and good), and of giving them some information about the Dominion. The editorial work has been conscientiously done, and we do not hesitate to recommend the book for use in junior classes, or for private reading in the case of older pupils. The text amounts to only 49 pages of large type, so that it can conveniently be read in a term.

P. de Musset, Monsieur le Vent et Madame la Pluie. Edited by E. Leakey. 80 pp. (Arnold.) 9*d.*—This fairy tale is written in simple French, and will be found suitable for a junior class. The narrative is bright and fluent, and the notes give information on all difficulties and many things besides. The grammar rules are neatly expressed. There is also a list of the irregular verbs with their principal parts; and a vocabulary, which is not quite complete. The proof has been read with care; we have noticed no misprints.

Conversation-book in French, German and English, for the Use of Schools and Travellers. By James Conner. Twelfth Edition. viii.+280 pp. (London: Dulau.)—The contents are divided into five groups of sentences referring respectively to (1) grammatical elements, (2) dialogues, (3) models of letters, bills and receipts, (4) common things, (5) proverbs. In addition, there are tables showing the principal monies in use in Europe and the United States, and their equivalents in English money. The sentences are arranged in parallel columns of French, German and English, but it is easy to understand that idiomatic expressions in one of the three languages sometimes admit of only an awkward rendering in the others. On the whole, the sentences are good ones, and the book could be profitably used in connection with the Gaspey-Otto-Sauer series of school books of French and German. Their brevity is a merit.

Classics.

Little Arthur's History of Greece. By the Rev. Arthur S. Walpole. xvi.+284 pp. (Murray.) 2*s.* 6*d.*—"This little book is an attempt to tell the History of Greece in a clear, simple, and interesting manner." So Mr. Walpole begins his preface, and it may be stated at once that he fully succeeds in his aim. There is no other book of which we know that presents the outline of Greek history as this does. It is fresh, plain, comprehensible and vivid, and withal the best modern historians have been studied to such purpose that nothing will hereafter have to be removed from the head of the child who has learnt this. For the publication of the book means that Greek history, with all its interest and its teaching for us to-day, can be made a valuable subject of instruction at a much earlier age than has been hitherto possible. The writer has wisely exercised his discretion in the choice of materials, and his selection is such as to produce a continuous narrative which includes all important events, and introduces all the most noted names from the period of the Pelasgians to that of the Roman conquest. Early in the book he brings prominently into view the secret of that weakness of Greece as a nation, which showed itself in the succession



DELPHI.

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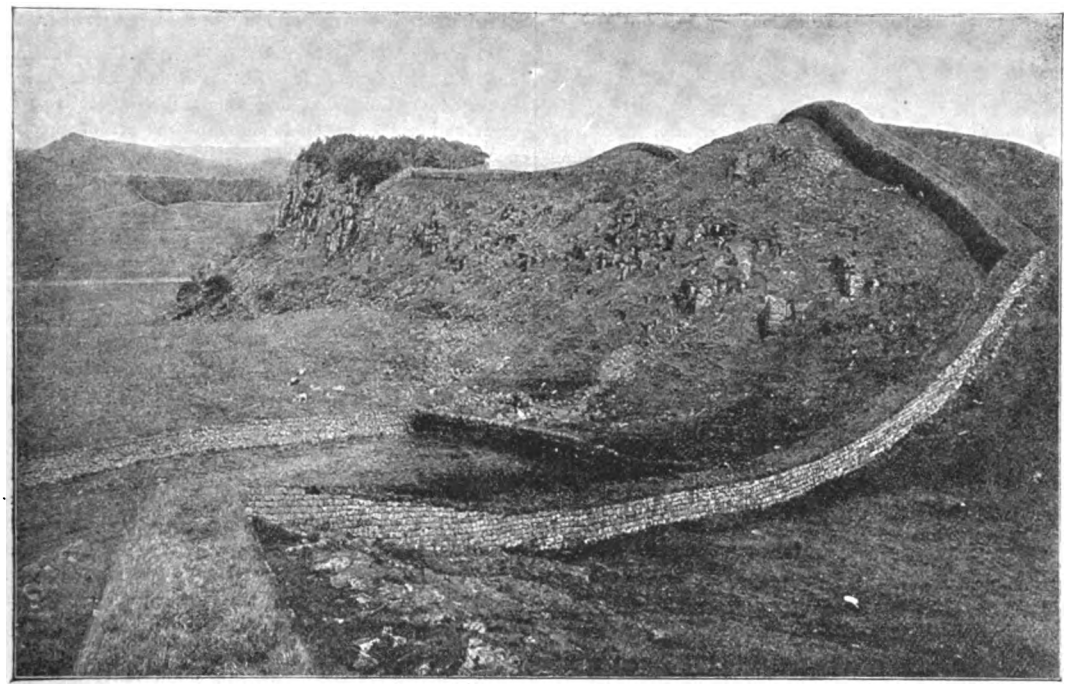
of headship and ever-continued rivalry between the various states, as follows: "The most important result of these mountain barriers was that Greece never in her best days became a single state, but was broken up into a number of smaller states. In a district no larger than a small English county there might very well be several free and independent cities, each managing its own affairs, making its own laws and carrying on miniature wars with its neighbours. It is much as if two county towns, say Canterbury and Dover, should quarrel, lead their armies into the field, and fight it out to the death." The explanations given of terms such as "oracle," "ostracism," and the like are simple and entirely satisfactory. The illustrations—one of which, a full-page picture of Delphi, we are permitted to reproduce—are so good that it is a pity there are not more of them. Finally, we may mention that a trial has been made of putting various passages before a very small boy to his abounding interest. What is more, he has remembered them.



PART OF THE ROMAN WALL. (CUDY'S CRAIG, NORTHUMBERLAND).

(From a photo by Messrs. G. W. Wilson and Co. Ltd.)

Messrs. Bell send the Second Part of their *Latin Course* by E. C. Marchant, M.A., and J. G. Spencer, B.A. xxiv. + 135 pp. 1*s.* 6*d.* It maintains the excellent features of Part I. recently noticed in these columns, and is to be followed by a third Part. In the "Illustrated Classics" of the same publishers we have this month:—*Ovid: Elegiac Selections.* By F. C. Smith, B.A. 86 + xliv. pp. 1*s.* 6*d.* *Euripides: Bacchae.* By G. M. Gwyther, M.A. 164 + xlii. pp. 2*s.* Both are admirably adapted for use in their respective places. We have also, in "Bell's Illustrated Classics, Intermediate Series," another of the very pleasant school books which the name now suggests to us, viz.: *Tacitus: Agricola.* By J. W. E. Pearce, M.A. xxiii. + 127 pp. 2*s.* We are permitted to reproduce an illustration of "Part of the Roman Wall (Cudy's Craig, Northumberland)." Several of the other illustrations are taken from Silchester, not the least interesting of which is that of some Roman tools, which shows how little our modern forms vary from those in use during the Roman occupation more than eighteen centuries ago. Liberality of illustration does not mean that other points are made subservient to this. We have, on the contrary, extremely good notes, very useful appendices on the text, on inscriptions illustrating the Roman period in Britain, and on grammatical and stylistic points.

Edited Books.

In Memoriam. Edited, with a Commentary, by A. W. Robinson, B.D. 272 pp. (Pitt Press.)—This is an addition to the literature growing up round the name and work of Tennyson, already not by any means insignificant. Mr. Robinson writes in a most sympathetic strain, and shows a complete familiarity with all the aspects of his subject. On some sides of it, indeed, he contents himself with hints and suggestions, but only with the conscious and obvious reserve of one who does not feel at liberty to say all that he feels or tell all that he knows, yet, nevertheless, who knows and feels with that intensity which alone can make criticism helpful. The introduction is singularly good, and the Commentary will be found very serviceable by those who have not time to read the more comprehensive works which deal with the subject. There is an abundance of biographical and historical detail; plenty of philosophic explanation; much discreet handling of the religious questions involved in the poem, and also a very complete view of the personalities of Tennyson and Hallam to be gained from this volume. It is of too good an order to be styled a manual, and it is not bulky or original enough to assume any position of authority; but such as it is, it is a welcome, serviceable and able elucidation of an almost unique poem.

Beowulf. By J. R. Clark Hall. 203 pp. (Swan Sonnenschein.) 5*s.*—The wide-spread and increasing interest manifested in this

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ancient poem will be vastly stimulated by this admirable volume. For once, "Beowulf" has been almost completely, quite adequately, and very vigorously rendered into modern English prose. No praise is too great for the art of the translator, who has also adorned his task with a great deal of admirably put matter in elucidation of the many difficult problems suggested by the study of this poem. There are a very fine introduction, ample notes, indexes of things and proper names, genealogical tables and a treasury of general information collected in this volume; and these valuable aids are supplemented by a number of well executed engravings, maps, and some *fac-similes* of the ancient manuscript. The bibliography of the poem is treated with unusual fulness, and will probably prove of very material assistance to those even who fancy they know something about the subject. It is possible, however, to improve one feature. If the extended argument or *excursus* which at present is sandwiched between short passages of the poem could be arranged in a marginal column, and so enable the reader to read either the text or its companion without teasing interruptions, it would greatly conduce to the comfort of those who want to get the swing of the poem as a whole, and are still not utterly incompetent to extract the sense of it. Otherwise this is a most pleasing and praiseworthy edition.

The Pentateuch. Part I. By H. C. Batterbury. 293 pp. Handbooks to the Bible. (Rivingtons.) *2s. 6d.*—This volume continues the scheme of preceding books in this series. It is compiled expressly for teachers, and with the exception of one rather dogmatic and objectionable passage in the preface, is admirably adapted to secure their suffrages. The notes are careful and exhaustive, the blackboard schemes most valuable, the suggestions as to matter and method helpful enough, and the prudent omissions are managed with discretion.

Geography.

World Pictures. An elementary pictorial Geography. By J. B. Reynolds, B.A. 128 pp. (Black.) *1s. 6d.* net.—Geography should be taught as the science of the topographic distribution of the earth's features in their relations to human activities. In the middle forms of English secondary schools it is rather the study of the earth as determined by the requirements of examiners, who, as a rule, are very conservative in their way of looking at geography as a subject eminently suited for the answering of questions in the tabular form so easy to correct, yet generally so non-educational. Writing for young children, Miss Reynolds could afford to ignore examiners; the result is that she has given us a book written on scientific lines—it is a successful attempt to familiarise youngsters with the human aspects of geography—and the seventy illustrations *plus* the numerous exercises are admirably fitted for this purpose. But has London a population of nearly 6,000,000?

The World's Highways. By C. A. Wood, M.A. (The Scholastic Trading Company, Bristol.) *6d. net.*—A handy little pamphlet, describing with the aid of maps the routes from London to Calcutta, Sydney, Yokohama; St. Petersburg to Vladivostok, Capetown to Cairo. The last two pages, 14 and 15, deal with the battlefields of South Africa.

English.

The Parts of Speech and their Uses. By H. W. Household, M.A. xii.+140 pp. (Macmillan.) *1s. 6d.*—The Headmaster of Clifton College has written the preface to this book, commending it to teachers mainly on three grounds:—"It is extremely simple and bright without being childish. The examples are easy, varied and appropriate. And whereas the fetish of completeness has been the ruin of many grammars, Mr. Household has had the courage to omit what is not necessary for his purpose." An examination of the book leads us to endorse these eulogist statements. The matter is within the grasp of the dullest pupil (and the most brilliant classical scholar). The book will be found suitable for boys and girls of all ages up to thirteen or fourteen; it covers the whole of the ground from "A noun is a name of any kind" to the analysis of a fairly straightforward complex (or, as the author prefers to call it, compound) sentence containing four or five subordinate clauses. We will take advantage of Mr. Household's desire to receive suggestions for improvements by referring to one point in which our experience leads us to modify his plan. There is so much laxity observed in the use of the terms "verbal noun" and "gerund" that it seems desirable to drop the use of the latter entirely; the *-ing* word was not a verb at all in Old English, and *gerund* is, after all, merely an invention of grammarians. Mr. Mason, we believe, went even so far as to distinguish between verbal nouns and gerunds. The trained mind, of course, appreciates this distinction, but the schoolboy has often more than enough to do to distinguish between verbal nouns and participles. On the ground of simplicity, then, we would urge writers of *English* grammars to discontinue the use of the word *gerund.*

Précis and Précis Writing. By A. W. Ready, B.A. (Bell and Sons.) *3s. 6d.*—This book will undoubtedly meet a want in the case of those who have to take the subject as part of their examinations. An explanation of the art of précis writing occupies 10 pages; 155 pages of specimens follow, and the remaining 34 pages are a key to these specimens.

The Public School Spelling Card. (Relfe Bros.)—The fact that it has been found necessary to print the thirtieth thousand of this well-known card is the best recommendation that can be given to it. In the higher forms of secondary schools it is invaluable.

History.

A Short History of the Greeks from the earliest times to B.C. 146. By C. S. Shuckburgh. 388 pp. (Cambridge University Press.) The Cambridge series for Schools and Colleges.—Mr. Shuckburgh uses the pen of a ready writer, and his work is sound, scholarly, and interesting. The present history differs from others only in the proportion. He has said less about the separate states than is usual, and more about general tendencies; he tries to express wide views of tendencies, traces the history of thought and political movements, and pays special attention to what we may call Greece beyond the seas. He does not appear to have studied the authorities as a specialist, but he is abreast of research in most points, and his work is trustworthy and judicious. We might fairly criticise details; such as his assumption that the Helots and Perioeci were of one race, that little can be discovered about the Pelasgi, that Homer's silence as to writing is a strong argument that it was not known. Tennyson, we believe, does not mention the printing press; and, as a matter of fact, the Cretan discoveries prove that writing was used in Greece five hundred years before Homer. But as a whole, the book is good; and the chief general fault we have to find is that there is too little geography. A Greek history, of all books, should have good orographical maps. There are a number of process illustrations, which greatly add to the interest of the book (see p. 277).

English History during the Stuart Period. viii.+221 pp. (Geo. Bell & Sons.) *1s. 6d.*—This is a newly published "volume" of Bell's History Readers. The outside cover calls the series "Stories from English History," but the inside title-page betrays the fact that the author has failed (probably inevitably) to maintain for the later period the method which he adopted for the earlier volumes. The fact is, it is impossible to tell the later history at all by way of "stories," and it is exceedingly doubtful if such periods should be presented as a whole to such young readers as those for whom this book is evidently intended.

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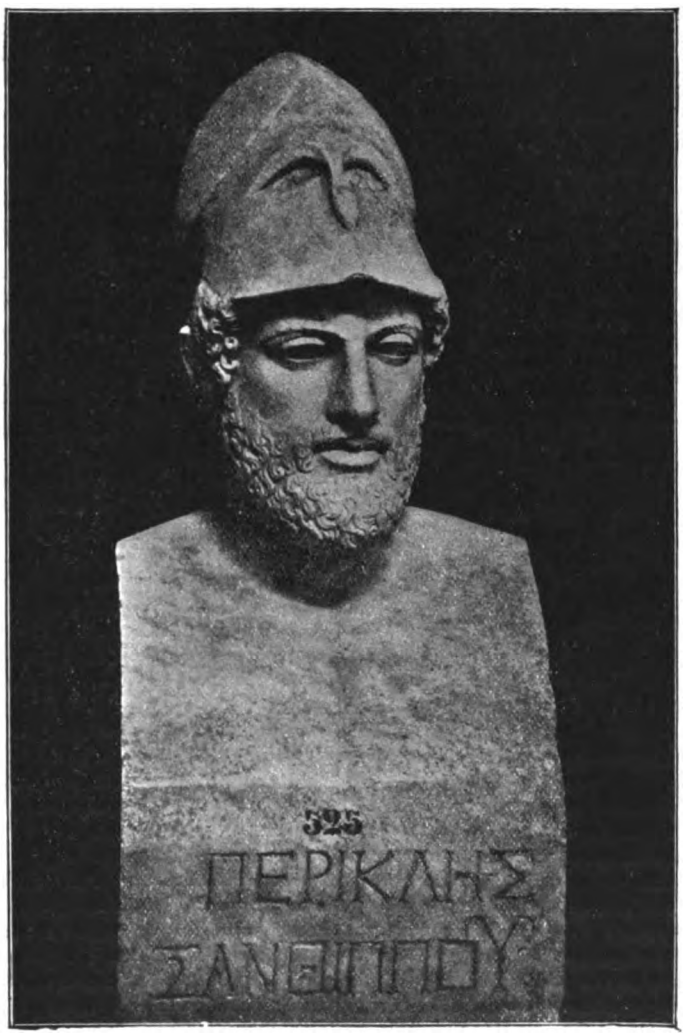
However, in so far as success is possible, the author has achieved it. The book is fully and well illustrated, and the events are almost entirely correctly given. Of course, Barebones' name was *not* Praise-God, as we now know, and it is somewhat strange to find Cromwell described as "narrow-minded" and his government as "unlawful." The youngsters will, what with the text on p. 186 and the picture on p. 185, form a rather confused idea of the history of the Eddystone lighthouses, and the author does not seem to have realised the eighteenth-century use of the word "occasional" (p. 147). Also there are three instances of bad grammatical construction on pp. 30, 44 and 96, against which we warn teachers. (They will discover them for themselves.)

Science & Technology.

Nature Study and the Child. By C. B. Scott, M.A. xxv. + 618 pp. (Isbister.) 6*s.*—This is a book in which every teacher interested in the study of nature will find matter of interest and service. As the book is of American origin, some of the trees and flowering plants selected as subjects of study are not familiar objects here, but this notwithstanding, the book is a desirable acquisition to a teacher's library. Much excellent advice is given as to the aims and methods of nature-study considered in its wider aspects—that is, including not only plants and animals, but also observational geography, meteorology, and astronomy. Moreover, the whole realm of nature is used as a ground for the cultivation of imagination, taste for good literature, appreciation of beauty, and love of truth.

The guidance afforded is of a kind which, if followed, will raise a lesson upon natural objects from a dreary recital of properties to an address which will influence the spiritual as well as the intellectual characters of the pupils. Outlines of lessons are given, and also numerous hints and references, in addition to the pedagogic principles; so that the book is one to which a teacher can turn for help as well as inspiration. There are, of course, a few points which do not exactly meet our views. The author has perhaps a tendency to be too didactic and detailed as regards the psychological aspects of nature-study. We do not want to know what everything preaches in nature, nor to make the subject distasteful by using every fact or phenomenon as a text for a lesson, after the syle of "Sandford and Merton." Again, though it is pleasant to think of how "Mother Nature protects her children," the other side of her character is not above reproach from a sentimental point of view. Isn't she "red in tooth and claw," and are not the sins of the fathers visited upon the innocent children? Nature is inexorable in her demands and inflexible in her consequences, and, as Huxley said long ago, the chief lesson to learn from her is that every act of a person has an influence upon the world as definite, though not so well understood, as the laws of cause and effect in inanimate matter. When a child grasps this fact, he has a staff to which he can trust with safety in his walk through life.



PERICLES.

From Shuckburgh's "Short History of the Greeks" (Camb: Univ: Press.)

Advanced Physiography. By John Thornton, M.A. Sixth edition. xii. + 400 pp. (Longmans.) 4*s.* 6*d.*—Mr. Thornton has revised and partly rewritten his book for students of physiography preparing for the advanced examination of the Board of Education, so as to bring it more into line with the syllabus issued a few years ago. Following the detailed instructions of the "Directory" as the book does, it is more or less inevitable that there should be a family likeness between this new edition and other books which have been written to the same syllabus. But Mr. Thornton's large experience as a teacher and writer has enabled him to produce an attractive and useful volume.

Miscellaneous.

Cupron Cells. (Accumulator Industries, Ltd., 14, Silver Street, Bloomsbury, W.C.)—The "Cupron Element" is a single-fluid primary cell of constant electromotive force and low internal resistance. The plates are of coherent porous copper oxide and of zinc, which are completely immersed in a strong solution of commercial caustic soda, protected from the air by a layer of mineral oil. One of the advantages claimed for the cell is that the copper-oxide plate can be regenerated by exposure to air (a particular in which the cell is superior to others of similar type). The smallest size of the Cupron cell costs 5*s.* 6*d.*, and is capable of yielding a current of two ampères, and its full capacity is 50 ampère-hours. The current obtained is very constant, and polarisation is only noticeable when the cell is short-circuited through a resistance of less than ten ohms. Any loss of E.M.F. due to polarisation is quickly recovered when the cell is allowed to remain in open circuit for

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one or two hours. The "Cupron Element" is far superior to the ordinary Leclanché cell both as regards the polarisation effect, and also in having so low an internal resistance that a much stronger current can be obtained if required. A small battery of these cells would form a convenient adjunct to any laboratory in which fairly strong currents are required, especially if there is no permanent installation of storage cells.

Philips' Physical School Globe. (G. Philip & Son.) £2, £3, and £4 4s.—This is a new terrestrial globe, large enough to be used in class teaching, and exhibiting clearly the chief orographical characteristics of the earth. The globe is nineteen inches in diameter, and can be obtained supported upon a foot (with or without a half meridian), or mounted on a tripod stand, with complete meridian and horizon, the prices being £2, £3, and £4 4s. respectively. Five gradations of colour are used to represent elevations from below sea-level to altitudes above five hundred feet. Physical features are not represented in much detail, and the method of showing ocean currents by bands of decidedly lighter tint than the surrounding water and abruptly separated from it is not a good one. Short, wavy arrows are much better. However, the globe will convey to the student an accurate idea of the relationship of rivers to elevated lands, and of the various parts of the earth to one another; its adoption is therefore to be commended.

Religious Teaching in Secondary Schools. 16 pp. (Longmans.) 6*d.*—This paper was read at the last annual conference of the Headmistresses' Association by Mrs. Henry R. P. Sandford. It shows in an able manner how to bring the religious teaching of a secondary school into touch with daily conduct.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Oral Teaching of Elementary Latin.

It is unnecessary to explain in detail the methods and principles of the "oral" method of teaching a language. These methods have of late been so frequently set forth and expounded in educational journals and elsewhere that probably every teacher of languages is by this time familiar with the systems of Continental origin which are being so widely adopted in our own country and bid fair to revolutionise our teaching of Modern Languages. Is there any such possibility of reform or improvement in the teaching of Latin in its elementary stages? This question I would like briefly to consider. Readers of The School World will, doubtless, have noticed Mr. Hartog's communication on this subject in the January number of this year, and he shows very clearly that the interrogatives in Latin are not really so formidable a difficulty as might appear at first sight, and gives in full detail an excellent specimen of a lesson conducted on the oral method. A few brief remarks and further suggestions on the same subject may, perhaps, be not without interest.

It does not appear to me to be at all necessary for the pupils to learn a considerable amount of grammar (declensions and indicative tenses) before employing the use of question and answer. As soon as a boy has learned a first-declension noun and the present tense of a first-conjugation verb, the interrogatives may with advantage be employed to enable him to grasp the all-important difference of subject and object, the first real difficulty and stumbling-block to beginners. There is one danger which must be carefully guarded against. When a simple question is put the pupil may possibly answer mechanically, though at the same time correctly, for the answer to the question will generally be the word which the teacher has left unsaid. Take, for example, the sentence, "Nauta procellam superat." Put the question, "Quis superat procellam?" and of course the boy replies, "Nauta." "Quid nauta superat?" and he naturally answers, "Procellam." To meet this it is necessary that the teacher should not always do the questioning. Select two boys, first the clever ones and afterwards those of inferior ability, and make one of them ask the questions and the other answer. The boy will require to think far more when forming his questions than when answering. The use of *quem*, *cuius* and *quid* will soon be acquired from their similarity to the English *whom*, *whose* and *what*.

The questions naturally become more varied when more grammar has been learned, when adjectives and pronouns have been brought into play. The use of the verb *facio* also becomes necessary. "Quid nauta facit?" "Procellam superat." The verb *sum* can be introduced, and the agreement of subject and complement impressed in similar fashion.

It will be found advisable on occasion not to allow the Latin Reader to be opened at all at the beginning of a lesson, but to begin with a simple question and let it develop like a photographic plate into a big word-picture. I experimented in this way on some very small boys recently who have been learning Latin for some six months. I commenced with "Quid regina facit?" "Regit," was the answer. "Quem regit?" "Populum, insulam, patriam, urbes." "Quid aliud facit?" "Amat, laudat, culpat, imperat," &c. The answers came quickly. "Quem amat?" "Amat regem, principes, cives, populum, milites, liberos, filios, filias," &c. The accusatives came as if by instinct, showing that the idea of subject and object had rooted firmly. "Dat leges bonas, dat decora, honores, praemia," &c. "Quibus dat?" "Imperatoribus, ducibus, bonis civibus," &c., and so forth. The conversation was kept up in this way for some quarter of an hour, and not a word of English as yet introduced. The mental activity of the boys was thus considerably increased and stimulated as they ransacked their brains for any words or ideas connected with or applicable to the word "queen," and a fair-sized vocabulary developed from one single word.

One more illustration. "Quid venator facit?" "Currit." "Quo?" "In agros, in silvas." "Quid videt?" "Arbores, aves, capros, apros," &c. "Quid facit?" "Occidit caprum, caprum monstrat puellis, pueris," &c. "Dat caprum filio reginae." "Quid filius facit?" "Caprum portat." "Quo?" "Domum, in reginae regiam." "Quid regina facit?" "Venatorem laudat," &c. Similarly from such words as *agricola*, *miles*, *dux*, *servus*, &c., lessons could be developed almost to any extent, and it should soon not be difficult by these methods to extract from a boy of ten a simple life in Latin of the late Queen or a short description of a battle between Boer and Briton. The two results which very soon make their appearance, viz., a thorough grasp of the most elementary rules of syntax and a big vocabulary readily occurring to the mind, are, of course, invaluable in the first stages of a language. It goes without saying that interest is kept going throughout the form and the pupils' attention riveted, and a spirit of rivalry maintained which cannot fail to be most helpful to the teacher. Moreover, accuracy of pronunciation is facilitated and more quickly imparted by these methods.

Even to boys of Second and Third Forms questions involving more difficult answers can be put with advantage occasionally, questions, for instance, where the answers are object clauses, infinitives or subjunctive clauses, &c. The uses, *e.g.*, of verbs with two accusatives and the passives may be brought into play. Also the uses of the cases by means of interrogative adverbs,

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e.g., "Quando Cæsar in Galliam veniet?" "Aestate." "Quomodo?" "Itineribus magnis, summa celeritate," &c. The ingenuity of the teacher will enable him to vary the questions *ad lib.* A short passage may be read in English to the pupils and the pupils made to write their own version of it in simple Latin sentences, adding such ideas of their own as are not incongruous and unsuitable to the piece.

The limits of this oral method are, however, for Latin strictly defined. Beyond the ordinary Third Form it becomes useless to employ the interrogatives, and of course the aims of the teaching of Classics must always be kept in view, and herein lies the difference between it and Modern Languages. The objects of the latter are twofold; firstly, to be able to converse in French and German, and, secondly, translation and retranslation. On the other hand, the dead languages are not taught for conversational purposes, and therefore oral teaching is useless after the purely elementary stages have been passed. Again, one of the chief advantages claimed for the direct methods in Modern Languages is that time is not wasted in the transition from one language to another. This, of course, does not apply to Latin, where the one chief object (apart from the mental employment of the big grammatical machinery ready to hand) is the rendering of Latin ideas, modes of thought, and expression in their corresponding idiom in English and *vice versâ*.

Pictures might with advantage be brought into use with the Junior Forms, though they would not probably be of so peaceful and civilised a character as the Spring, Summer, Autumn and Winter of Dent's French and German Readers. The arts of war would be more profitably portrayed than the arts of peace.

In conclusion, apart from the material advantages which have been mentioned, there is surely no inconsiderable reward for the master who can vary the monotony of the old traditional methods with occasional lessons after the manner described, and render the beginnings of Latin more interesting and more pleasurable to teacher and pupil alike.

CHARLES E. KELSEY.

The Hulme Grammar School,
Manchester.

Aims and Methods of Science Teaching.

As Mr. Findlay has entered into the correspondence between Prof. Armstrong and Mr. Abbott, I venture also to express an opinion upon some of the points which have been brought forward, presuming that you consider the matter of interest to all teachers of science. The personal part of Mr. Findlay's letter only concerns Prof. Armstrong, and he is well able to take care of himself if he is so minded. But there are some facts and principles involved which ought not to be permitted to be obscured, and it is to these that I wish to give attention.

Mr. Findlay apparently objects to Prof. Armstrong's exhortations and criticisms, and asks, in words which do not err on the side of dignity, for a sign that Prof. Armstrong is really an educational prophet. Before accepting the Professor as such, he requires evidence of experience in teaching children, and of researches which justify the expression of views on the value of psychology. Now I consider both these points as beside the mark, not to say misleading. The matters to be considered should be the educational value of Nature Study and the bearing of psychology upon the work of teaching. Every teacher has a right to an opinion upon either subject, and all of us should know what weight to attach to the expression of it. It is undignified to ask for credentials in the way Mr. Findlay has done. I do not know what Prof. Armstrong can answer to the questions raised, but I do know that the development of science teaching on reasonable lines during the past eight or ten years is largely due to his efforts. Few teachers agree with Prof. Armstrong at every point, and his scheme of work is only practicable in very favourable circumstances; nevertheless, the fundamental idea of the reforms he so vigorously advocates now runs through all intelligent science-teaching, and this alone, I say, renders his views worthy of respect, though he may not possess the diploma of the College of Preceptors, with which Mr. Findlay was recently associated.

And, after all, how many of the reformers whose ideas are accepted as standards of pedagogic principles were teachers of wide experience? Rousseau was a private tutor of indifferent morals, and neither Locke, Montaigne nor Rabelais were ever in charge of a class. Even Pestalozzi was a failure as a practical teacher. But perhaps the best example of the kind is afforded by Mr. Herbert Spencer, a bachelor who was never a teacher of children, yet whose book on "Education" has become a classic in educational literature. Remembering these facts, I fail to understand the spirit which induced Mr. Findlay to ask Prof. Armstrong, in effect, by what right was he among the teachers of teachers. Mr. Findlay will pardon me for reminding him of Herbart's dictum: "The teacher as tutor to two or three pupils creates his own school. To him who hears the true artist's call to education, the small dull space in which he at first perhaps feels himself confined soon becomes so bright and large that he discovers the whole of education therein, with all its motives and needs, the satisfaction of which is truly a work immeasurable." Of course no individual, be he never so learned, will arrive at the ideal method of teaching, but every earnest practitioner can teach us something, and nobody doubts Prof. Armstrong's earnestness.

It must not be thought that Prof. Armstrong has condemned Nature Study any more than he has condemned bad teaching of all branches of science. In your May issue, he said: "As to Nature Study, to accuse me of being an objector to true Nature Study is a gross perversion. What is put forward under the name at the present day is, for the most part, sheer pretence—more often than not, empty twaddle, unworthy to be called *study*." In this opinion Prof. Armstrong is right, as everyone knows who has inspected or examined the work.

Is Mr. Findlay familiar with present-day teaching of the branches of science usually included under Nature Study? I have heard "object lessons" in which an object took no part. I have been present at children's lessons in geology and biology in which the only apparatus was a book. Botany lessons where the nearest approach to a plant is a highly-coloured caricature in the form of an old-fashioned wall diagram are still not unknown. I will venture the assertion that, in South Wales even, it would not be impossible to find a school where the only Nature Study is an occasional lesson (from highly complex "Notes of a Lesson") on the "Elephant," a "Policeman," or a "Boa-constrictor." This is the kind of Nature Study which Prof. Armstrong and every man of science with him considers to be of no value.

Finally, as to the value of psychology. I have heard many secondary schoolmasters speak of it in terms beside which Prof. Armstrong's protest seems colourless and insipid. But I need not labour this point. Let me quote an eminent psychologist, Prof. James, of Harvard. "It is only the fundamental conceptions of psychology which are of real value to a teacher, and they, apart from the aforesaid theory of evolution, are very far from being new." "I say, moreover, that you make a great, a very great mistake, if you think that psychology, being the science of the mind's laws, is something from which you can deduce definite programmes and schemes and methods of instruction for immediate schoolroom use. Pyschology is a science, and teaching is an art." "To know psychology, therefore, is absolutely no guarantee that we shall be good

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teachers." "The worst thing that can happen to a good teacher is to get a bad conscience about her profession because she feels herself hopeless as a psychologist." And so on. It is clear that some psychologists may ask to be saved from their friends.

June 10th. W. SPENCER BUXTON.

MR. HARTOG'S interesting letter in your June number has set me thinking of some experiences of my own in teaching boys to study Nature. We, too, had a piece of garden. The headmaster, I remember, gave us a slice of his for the purpose of practical work in botany. We had a single formal lesson of three-quarters of an hour each week in which to learn what use could be made of the garden. In this short time I was able during a single term to introduce such subjects as germination, the effects of sunlight on growth, the forms and uses of leaves, and similar simple matters. The keenness with which those youngsters went to work comes back to me as an inspiration even now, when all such delights are merely recollections. I should like to recount one example of how such work can be made to spell "research," to use Mr. Hartog's expression. The boys had been put to set some peas with the object of following the steps in the process of germination. One youngster, by no means a shining light in his form, came to me one day in a bashful sort of way to talk about the peas. I could see he had something on his mind. "Why do the peas taste sweet after they have been in the ground for some time?" was the question he asked me. Naturally my interest was aroused. "How do you know they do?" I replied. "Please, sir, I dug one up and tasted it." "But what made you do such a thing?" was my next question. After some delay the answer came. "I have often tasted peas before they have been set, and one day I wondered if they tasted the same after being in the ground, so I dug one up and tried—and found it sweet." Surely this was true research? Of course, I took the opportunity to explain the change of starch into sugar with the aid of a ferment, and added a word or two about the necessity for soluble foods to nourish both plants and animals. I did *not* call him a dirty boy for putting nasty things into his mouth.

F. R. WILLING.

Woodford,
June 12th.

History in Schools.

SUPPOSING there were no time-tables, and therefore no limitations of time, and supposing there were no examinations and therefore no hurry—two suppositions which remove our discussion from the work-a-day world in which schoolmasters habitually and necessarily live—let us transplant ourselves in imagination to Utopia, and think about the question raised by Messrs. Childs and Davies in your pages recently.

What *is* this universal history which Mr. Childs would prefer to national history? Take, for example, the two hundred years which Prof. Lodge has just treated in his recent book. Does it not resolve itself into national histories, French, German, Spanish, Swiss, Italian, &c.? "Broad views," "generalisations"—where are they possible? True it is that no national history can be told by itself, without constant reference to the history of other "nations." That part of the story called international implies as much in its very name. And in the telling of constitutional history, we should never quite lose sight of what is happening contemporaneously in other lands. For example, the inauguration, through the Yorkist period of English history, of the Tudor despotism is paralleled and illustrated by the downfall of parliamentary government in France and other countries, and by the growth of the Italian despots. I do not, of course, deny that there is, in the middle ages at least, a unity of European history. But when a historian wishes to tell that story, he is compelled, by the nature of things, to represent it as the story of that one state whose history is in England more ignored, if possible, than that of any other "foreign" power. I refer to the Holy Catholic Church with its monarchy, the Papacy.

The question resolves itself into this: Is it more desirable that our pupils should have a thorough knowledge of English history, with a slight acquaintance with such characters as Karl the Great, Innocent III., Louis XI., Maria Theresia, &c., than that they should know their English history only in the same proportion as they know the history of Europe in general? We have known little children who are learning "Africa" or "South America," who have no notion of Manchester or Kent. Such is the parallel in geography. Is the answer, as suggested by this parallel, at all in doubt?

In the "story" stage, I would add to the ordinary curriculum stories from abroad. And for the years nine to fifteen, or thereabout, I would freely encourage browsing in the school library. But *only* when our pupils know something certain and clear of our national history, which (*plus* its connection with the Catholic Church) makes a very fair "whole," quite as large a universe as most youngsters can grasp, would I lead them on to what I should use as further illustrations of the tendencies which have been visible to them in the various centuries of their national history.

Allow me a paragraph suggested by the word "campaign." There has always been a tendency to expect knowledge of purely military matters from our youngsters, and examination questions are asked not only as to plans of campaigns, but as to details of single battles. This tendency is increased and is likely to be further increased by our present military fervour. But if there is one large compartment which might fitly be entirely relegated to experts it is this matter of military history. It is exceedingly difficult, sometimes quite impossible, to get at the facts, specially of battles, and even when the story of a campaign is known, so much depends on a detailed knowledge of topography, even to sites of villages and mere hamlets, that the whole study becomes purely technical and should be banished from "history" properly so called. The reasons for campaigns may be studied, the political results of military events are of course important, but the purely technical questions should be left to the professional training of a soldier, not allowed to hamper our text-books and lessons in history.

Cambridge, A. JOHNSON EVANS.
June 17th.

The School World.

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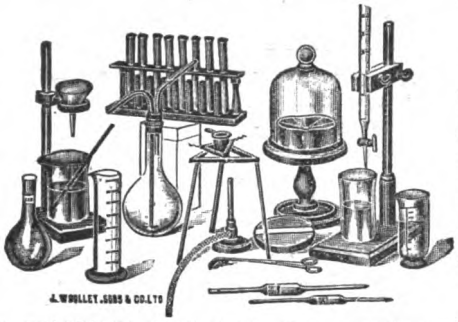

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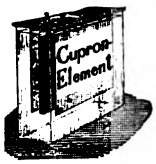

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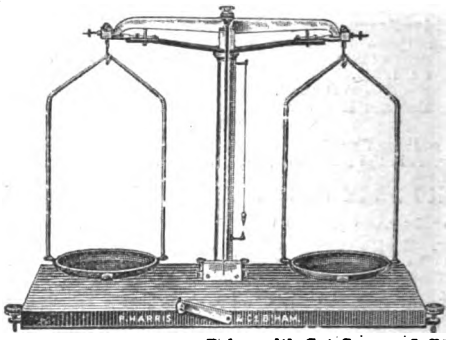

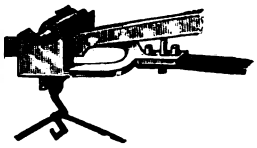

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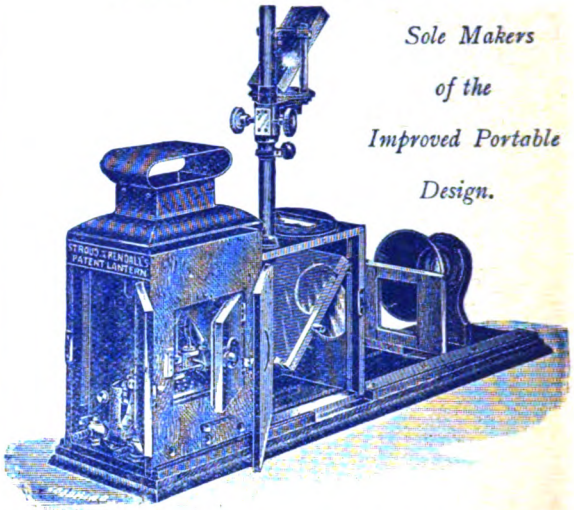

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No. 32. AUGUST, 1901. SIXPENCE.

GENERAL KNOWLEDGE PAPERS.

By J. D. McCLURE, LL.D.
Headmaster of Mill Hill School.

IT would not be easy to give an exact definition of "General Knowledge;" still less easy to indicate precisely what might (or might not) fairly come within the scope of a "General Knowledge paper." In the absence of any recognised authority on such questions, each examiner must be, of necessity, a law unto himself. Knowing that he will assuredly fall short of the ideals of others, he must rest content with a respectable approximation to his own. Precedents, though increasing rapidly year by year, are still but few; and the differences between school and school (*a fortiori*, between school and college) are ofttimes so great that one derives but little real assistance from the perusal of papers concocted by another examiner even under (apparently) similar conditions.

For some time past it has been the custom in this school to examine in General Knowledge twice a year—in December and April. On each occasion two sets of questions have been given; one to the lower school, the other to all forms above the third. It has always fallen to my lot to prepare the latter paper, and to examine the answers sent up. The experience thus gained is far too limited to justify me in posing as an "expert," yet it constitutes my only claim to write on the subject. If, therefore, in what follows I adopt too dogmatic a style, I beg that it may be attributed rather to the depravity (natural and acquired) of a schoolmaster who spends a substantial portion of his life "feet above contradiction" than to my conviction that the views and observations herein contained are indisputably correct.

It is probably best, on the whole, that the responsibility for the preparation of a General Knowledge paper should rest upon one individual. He must, perforce, seek "suggestions" from friends and colleagues; but the paper in its final form should be his handiwork. Even if the plan be adopted of "composite setting" (*e.g.*, five men each contribute three questions), it would still seem desirable that there should be some one with power to revise by alteration, elimination, or substitution. If it be otherwise, one may expect to find overlapping, omission, undue predominance of questions dealing with one class of subject—in short, a badly balanced (and therefore unsatisfactory) paper. As the main object of the examiners should be to give all types of candidates a fair opportunity of showing knowledge, such a result is the more deplorable; nor does the frequency with which it is achieved afford any valid excuse. It is, of course, impossible (or, at any rate, only *theoretically* possible) to make a General Knowledge paper which shall be above criticism; but it is quite possible, though by no means easy, to set one which contains questions on many different subjects without being open to the charge of favouring unduly any one of them. The effort required to produce such a paper is one of its chief advantages; and no one, I imagine, who has ever made the effort will deny that *he* profited greatly thereby, even if his pupils did not. If the candidate find the questions hard to answer, he may derive some consolation from the thought that they were at least as hard to set. The vastness of his own ignorance may become painfully clear to him; he is not the first, however, to whom the paper has made a similar revelation. Thus—

> —— —— it is twice bless'd;
> It blesseth him that gives and him that takes.

If a General Knowledge paper, then, is to be a fair test, it should deal with many topics, and therefore contain many questions—at least three times the number which one can expect the best candidate to answer. At the very outset one class of question suggests itself—to wit, that dealing with current events. In some cases, indeed, the questions are wholly of this character. Even when this is not so an examiner will probably regard topics of the time as common ground for all candidates, and will prepare a substantial portion of his paper accordingly. I find in one case four questions out of seventeen devoted to, or suggested by, events of the day, while in another ten out of sixteen were of this character. These are the lowest and highest ratios respectively which I have known. Some little care must be bestowed upon the scope and wording of such questions if they are to be, in the best sense, educational. The average man only "skims" the daily paper (and, as a rule, fails to secure the

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"cream" of it), and the average boy is but little better in this respect. Hence his knowledge of passing events is apt to be vague and inaccurate. This arises partly from the said habit of "skimming," and partly from a constitutional dislike of taking pains to understand.

In questioning him on current events it is very important, therefore, to counteract this tendency to vagueness by asking for definite, though general, information. Some illustrations will make the point clear. In reply to a question, "State exactly the causes of the war between the United States and Spain," very few answers of any kind were received, and not half-a-dozen could be considered satisfactory. The second part of the question asked for a brief sketch of the operations of the war, but the answers in this case were no whit better, though isolated facts seemed to be well known. The war in South Africa naturally suggested many questions, though, for obvious reasons, I set none as to the causes of the struggle. It was astonishing to find how few people (not only boys, but men and women) had any clear notion of the meaning of such words as "brigade-division," "howitzer," "shrapnel," or even "sniping," "kopje," and "veldt," though these words were occurring daily in the newspapers. A fair number gave a brief outline of Lord Roberts's operations in South Africa; but the attempts at drawing a sketch map to illustrate the answer would have been ridiculous had they not been so pitiable. Not one person in six was able to draw a map which, by any stretch of charity, could be called satisfactory. Enquiries as to the Hay-Pauncefote Treaty and the Union of the U.P. and Free Churches in Scotland revealed a similar want of accurate knowledge, though many answers showed both an interest in the subjects and some acquaintance therewith. If, as I strongly recommend, the examiner goes over the paper with the examinees after he has read their answers, he may do much to discourage slovenly habits of reading and of thought, and, in the positive direction, to foster accuracy of observation and intelligent interest in contemporary history.

Amongst the multitude of subjects which may come fairly within the scope of a General Knowledge paper there is so much room for choice that it seems well nigh impossible to lay down any rules for the guidance of oneself or others. Perhaps, however, it may not be out of place to call attention to the fact that there is a kind of knowledge to be obtained not so much from books as from observation of the outside world. In other words, there are in most schools some whose hobby is Natural History. This class of boy is apt to be neglected in a General Knowledge paper, unless indeed his examiner happens to be similarly constituted. Yet knowledge gained in the way indicated is surely of the highest educational value, and ought certainly to be recognised in estimating the general intelligence and information of any examinee.

So far as I am able to ascertain, it seems to be the general experience that the average of marks obtained is greater (often considerably so) in the forms on the classical side than in the corresponding ones on the modern side of a school. Such, at least, has been my own experience, but with certain remarkable exceptions. The best sets of answers I have ever received have been from boys who were at the time reading for, or who had actually obtained, natural science scholarships at Cambridge. Not that the paper was specially constructed with a view to the peculiarities of science students—quite the contrary, in the judgment of classical men. Nor was the result due to any bias in the examiner; for the best papers were read independently by two masters, one a classic, the other a science man. Each adopted his own system of marking, and yet the only discrepancy in their results was that the former placed the science boys somewhat further ahead than the latter. I cannot pretend to explain the fact, but it seems worth while to call attention to it, since it is quite contrary to the usual experience.

If an examiner takes the trouble to go over his paper afterwards with his examinees, he will probably find that every one of them could pass a very fair examination in the whole of the questions. Everyone will have done some of the paper, and the comparison of notes has probably been sufficiently extensive to enable each one to supplement his own knowledge from that of his fellows. This is certainly one of the results which may be regarded with unmixed pleasure. Not only does it tend to disarm criticism and banish discontent (for a question which one considers unfair and unreasonable is regarded as easy by another), but it helps to create a spirit of mutual respect. Many boys who do not stand very high in form order come near to the top on general knowledge papers, and profit accordingly. I might also add that, in not a few cases, I have known parents await the arrival of the paper with interest (sometimes with a certain wholesome trepidation), and, after a reasonable interval for reflection and consultation, go through it with their children (and friends). Owing to the artificialities of modern society, and the constant habit of concealment or repression of emotions, the results amongst adults are not always to be as unreservedly commended as those which one observes in a society more free from the trammels of conventionality.

One result, which every schoolmaster will value highly, is the light which is thrown upon the character of boys and their "hobbies." A question (already quoted), as to the war between the United States and Spain, drew forth one answer of astonishing merit. No one could have written a clearer account of the origin and course of the struggle, which was traced from the beginning to the conclusion in a continuous narrative free from digressions, irrelevancies or emotional adjectives. On another occasion a question on the different kinds of vessels in the British Navy and the special functions they were intended to fulfil produced an essay of eleven pages packed

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with accurate and detailed information. The examiner must confess that he could not have written on the spur of the moment anything like so complete an answer. The astonishing fact was that, on testing the statements, only one slight mistake (on a matter of detail) could be discovered. On yet another occasion a question was asked about the "Pre-Raphaelite" school. One answer not only mentioned the principal artists belonging to the brotherhood, but gave a fairly complete list of their works. If it be well that a schoolmaster should be in full sympathy with his pupils and, to this end, that he should fully understand them, my own small experience would certainly move me to state, unreservedly, that a good General Knowledge paper will contribute greatly to both these results. "Know something of everything and everything of something" may be taken as expressing, roughly, a great ideal. In this country, at least, too much stress has been laid on the latter part of the maxim with the inevitable result. Anything which helps to widen the mental horizon of the average schoolboy, or to bring home to him the vastness of the world outside home and school, is surely a boon alike to his mental and moral nature. If, in addition, he is led to an intelligent interest in contemporary history, and made to realise his own part (however small) therein, something has been done to foster in him a truer ideal of citizenship and a truer conception of the duties which will one day be his as a member of the greatest Empire the world has ever seen.

THE STUDY OF LOCAL HISTORY.

By A. M. DAVIES, B.Sc.(Lond.).

THE soil of England is saturated with its history. On every portion of it there are almost indelible traces of the past, if only our eyes are opened to see them. The increasing recognition of this, and of the advantage to which it may be turned in the teaching of history, have been lately evidenced in several ways. The London School Board has quite lately taken steps to secure the co-operation of the corporations of the new London boroughs in a scheme for a series of lectures on their local history; and from several parts of the country a demand seems to be arising for school reading-books on the geography and history of the county.[1]

As there may be many teachers of history who would be glad to turn their own local history to account in their teaching, but do not know how to get the necessary information, we propose to indicate, as far as can be done in a brief article, the most easily accessible sources, with some suggestions as to how they may be turned to account. Anyone who can spare a few days from a holiday, or an hour or two at intervals, to the Reading Room of the British Museum will find upon its shelves and immediately accessible a great storehouse of information.[1] Other public libraries will serve almost equally well those to whom they are more accessible.

We must first decide upon the area we shall undertake to study. In the case of a school not situated in a large town, the county will be the most appropriate area, but special attention should be paid to the parish. Intermediate between these two come the almost forgotten divisions—the hundred or wapentake, and sometimes above these the lathe, rape or riding; but as these (with the exception of the Yorkshire riding) have been constantly losing their individuality ever since Saxon times, we need not pay them very great heed. If we live in the suburbs of London, we have a double history to consider: that of London City, and that of the little village of Middlesex, Surrey or Kent, which has been swallowed up by London. The same may be said in the case of other great towns.

We will start by consulting Anderson's "British Topography" (Catalogue Desk B in the British Museum Reading Room), where we shall find the title of every county, borough or parish history published up to 1881. All the most important of these works are on the Reading Room shelves (2061 to 2066), and we shall be saved much trouble if we find out all we can from these first before proceeding to the ancient records on which they are based. Probably many will feel content to stop at this point, but we cannot let them do so without a caution. Excellent as many of these local histories are in their way, they were mostly written before the rise of modern historical methods and results, and they often unintentionally misinterpret or fail to interpret the true meaning of ancient records. Therefore we urge those who undertake the search we are suggesting to go on to the original records. We will take "Domesday Book" as the best example, because it is more complete in its scope than other records, and after trying to show how that may be read and understood, we shall more briefly indicate the other records that are available.

Although it is well to refer to the facsimile copy prepared by the Ordnance Survey and published in county volumes, in order to familiarise oneself with the appearance of this famous document, the printed copy (as near a facsimile as type can give) at Catalogue Desk D will be more useful to search through. Even this will prove difficult reading on account of the abundant abbreviations; but these are explained in Martin's "Record Interpreter" (2050d). For a few counties (Middle-

[1] "History of London," by Sir Walter Besant. (Longmans.)
"Our Great City," by H. O. Arnold-Foster. (Cassell.)
"A Short History of London," by M. J. C. Meiklejohn. (Holden.)
"Essex, Past and Present," by G. F. Bosworth. (Philip.)
"Kent, Past and Present," by G. F. Bosworth. (Philip.)
"The Story of the West Country." (Arnold.)
"The Story of Wales." (Arnold.)
"The Story of London." (Arnold.)

[1] In this article numbers in parentheses (2000 to 2121), after the name of a book, refer to the shelf on which it may be found. A book mentioned without a number must be looked up in the Catalogue and applied for in the usual way.

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sex, Surrey, Hants and Cornwall) there is an official edition containing a full extension of the Latin text and literal English translation, and many other counties have privately prepared translations (see under "Domesday Book" in the B.M. Catalogue).

First let us bear in mind the object of "Domesday Book," and how it was compiled. It was what we should now call a rate-book. King William wished to levy taxation in a constitutional way, in the way that his predecessors on the throne had done, but more equitably than they had been doing latterly, for the basis of assessment was an ancient one, and many changes had taken place since it was made. Though his taxation may have been heavy it was not new, and he was careful to follow the old English methods. His commissioners met the men of each hundred in the shire-moot—lords and priests and villeins alike—and there put to them certain questions to which answer was made on oath and in the hearing of all. Let us suppose we are considering the village of Harefield in Middlesex: we translate the entry in "Domesday" as follows:—

Richard the son of Count Gilbert holds *Herefelle*. For 5 hides it defends itself. The arable land is 5 carucates (or plough-lands). In demesne two hides, and there are two plough-teams. The villeins have three plough-teams. There the priest has one virgate, and (there are) five villeins each with one virgate, and five others each with half a virgate, and seven bordars each with five acres, and one bordar with three acres, and three cottars and three serfs. There (are) two mills of 15 shillings. From four fisheries a thousand eels. Meadow for one plough-team. Pasture for the cattle of the vill. Woodland for 1,200 pigs. In all its values it is worth twelve pounds. When received eight pounds. In the time of King Edward fourteen pounds. The Countess Goda held this manor in the time of King Edward.

Now this may not seem to tell us anything intelligible, but it only requires interpretation, and we shall find in it the basis for a vivid picture of the life of the villagers at that time. The clue to its meaning lies in an understanding of the agricultural economy of the period, and that understanding may be obtained by a study of Mr. Seebohm's classical and fascinating book, "The English Village Community" (2016b). Besides this, we recommend the reading of two articles in "Domesday Studies" (Domesday Commemoration Committee, 1886), "On the Study of Domesday Book," by Stuart Moore, and "Domesday Survivals," by Canon Isaac Taylor. Those who can spare time for deeper study will find Prof. F. W. Maitland's "Domesday Book and Beyond" the best guide.

Nor should we fail to read the "Dialogues of Aelfric," that earliest of English school-books, in which the novices of the monastery nine hundred years ago learned Latin by reading descriptions of everyday life and work in Anglo-Saxon and Latin interlineated. No complete English translation of these Dialogues has been published, but they are printed in Thomas Wright's "Anglo-Saxon and Old English Vocabularies," and in Benjamin Thorpe's "Analecta Anglo-Saxonica," and are easily read.

The Ploughman is the chief character in the Dialogues, and he tells how he must rise early and yoke his oxen (the use of horses for ploughing was of later date) and plough a full acre before noon. Now an acre is a strip of land a furlong (*i.e.*, furrow-long) in length and four rods in breadth.[1] If he ploughed with a full plough-team he had eight oxen, and in the course of a season he should plough 120 acres, which would constitute a *hide* (Anglo-Saxon), *carucate* (Danish and Norman), or *sulung* (Kentish). Thirty acres made a *virgate* (Norman), *yardland* (Anglo-Saxon), or *yoke* (Kentish), 15 acres a *bovate* (Danish). So we see that Harefield, unlike many other places, was fairly assessed at 5 hides, since there was arable land for 5 plough-teams. Two hides and the corresponding teams belonged to the lord, the rest was divided among the villeins, some having one virgate and some half a virgate. But more is implied here than a mere area. Each holder of a virgate held with it two oxen, certain strips or doles of the meadow-land by the river, and right of pasture on the common or waste. Moreover, his virgate was not a compact holding, but a series of thirty separate acre-strips coming in rotation with those of his neighbours in the common open fields that lay round the village. Beyond these fields came in one direction the meadow-land and the river Coln, with its mills and fisheries, and in the other the great woods where the swineherds looked after the enormous flocks of pigs.

We hope that enough has been said to show how the everyday life of any village in the eleventh century may be brought back to us by our interpretation of the Domesday Record. We must now refer much more briefly to other sources, none of which can be trusted quite so certainly for information about any particular place, but which have the advantage of having been edited with an index, in which we can ascertain quickly whether the manor, parish, hundred or county is mentioned.

The "Anglo-Saxon Chronicle," of which there are two translations (2070c and 2073, 23), refers only to places where historic events occurred. Kemble's "Codex Diplomaticus Aevi Saxoni" (2071c) is a collection of charters by which lands were granted to various religious bodies. The charters themselves are in Latin, but each has at the end a statement of boundaries in Anglo-Saxon, which is often of supreme topographical value, and not unfrequently shows that the boundaries of a place in Anglo-Saxon times are identical with modern parish boundaries.[2] In later times we have an abundance of old records which have been printed either by the Record Commissioners or in the Rolls Series. The former are to be found in the Reading Room at Catalogue Desk D, and among

[1] The Londoner may help himself to a clear idea of the size of an acre by noting that it is just a little less, both in length and breadth, than the area of Westminster Bridge.

[2] For examples of the interpretation of these, see Seebohm, *op. supra cit.*, p. 107, and Hales in "London and Middlesex Archæological Society," vol. vi., p. 560

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the most important are the *Rotuli Hundredorum* of 1279, which constitute a second Domesday for certain midland counties, and the *Nonarum Inquisitiones* of 1340, in which for the first time taxation is assessed by parishes instead of by manors, while the nearness of its date to the year of the Black Death adds to its economic interest.

The Rolls Series (2073 to 2077) contains a great variety of documents. Among the most interesting of them for our present purpose are the Chronicles of many of the great abbeys and monasteries, in which incidentally occurs information about many of the manors in their possession. The searcher after local information in this series must, however, be prepared to do a great amount of index-searching and not to be discouraged by constant disappointments.

A number of societies have also undertaken the publication of ancient documents. In the Camden Society's publications the "Domesday of St. Paul's" may be mentioned as of great value in relation to the manors belonging to the cathedral in the Home Counties. The Selden Society has published selections of early records of pleadings in the royal and manorial courts, which may be made use of to illustrate local history, as they tell tales of the crimes and quarrels that made up a part of mediæval daily life.

If we happen to be dealing with one of the ancient boroughs we shall find that all of these (with the exception of London) have special entries in "Domesday Book" at the beginning of the county in which they lie. It must be remembered that these were originally only villages selected as suitable centres for military purposes, and at the time of the Conquest they were only just beginning to develop as industrial or commercial centres (again excepting London). For their later development Mrs. A. S. Green's "Town Life in the Fifteenth Century" should be read, and for London W. J. Loftie's "History of London." Of late, too, many cities and boroughs have published some of their own records, and teachers under the local authorities should find no difficulty in obtaining all the information they want. We would also call attention to the "Historic Towns" series. Almost every parish has at least one historical monument—the parish church; and from this in many cases a telling historical lesson may be drawn. The best short account of church architecture will be found in Parker's "Introduction to the Study of Gothic Architecture" (Parker, Oxford); and the same author's "Glossary of Architecture" (2032b) is valuable for reference.

When we have done the best we can in collecting fragments of local history there remains the task of weaving them into a connected whole which shall appeal to the minds and arouse the interest of our scholars. We have no space left in which to dwell upon this, and indeed it would be difficult to say anything of general application, so much depends upon the local circumstances and so much upon the individual teacher's personal interests and sympathies. In one place ancient monuments and buildings are plentiful, while in another traces of olden times must be searched for beneath the overgrowth of a modern town, though when found they are none the less useful as a lesson of the dependence of the present on the past. Some counties, as Kent, have had an almost independent history of their own; others may show the traces of successive occupying races —Celtic, Saxon, Danish; others have been specially favoured as the scenes of great national events. Anyone who has an enthusiasm for English history will have no difficulty in turning to account the materials, however scanty, that he can obtain by the search we have suggested.

ENGLISH LITERATURE A GREAT DISCIPLINE.

By P. A. BARNETT, M.A.

II.—PRACTICAL MAXIMS.

(*Concluded from p. 203—June.*)

THE first part of my discussion of this topic dealt with general considerations. Let us now see what practical maxims we can derive therefrom for use in the schoolroom.

First of all, the school has no excuse for not using the very best. Of course we must have particular regard to the *capacity* of our pupils; but, on the other hand, we must not hesitate to use great literature on the mere ground that we ourselves see so much more in works of art than our pupils see. We can and should, for instance, use Shakespeare pretty early in the school career; children of ten or eleven and even less are quite capable of comprehending a dramatic situation and appreciating dialogue. And the training of the æsthetic capacity is never finished. Just because æsthetics cover such an enormous area—the largest possible area, indeed—of life, therefore as life expands and experience lengthens, our capacity continues to grow. Compare this with our other capacities. For instance, whatever the opportunities for practice, the capacity for learning new languages begins to contract, with most of us, before we attain our legal majority; but our power of appreciating noble expression and the pathos and humour of life may and should grow with our growth indefinitely. Life means more to us as we go on living, if we live well, and we should therefore be more capable of seeing it in a great way, significantly, as great artists have seen it; and to this end the greatest means is the companionship of great books.

We are now able to lay down the main conditions under which the school can conduce most effectually to this result. It is to be remembered always as a preliminary that art is long and life, particularly school life, is terribly short. We are bound, therefore, to be very scrupulous in making the most of the few hours at our disposal.

We must, first of all, use good material. We

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ought to be at some pains to find out the noblest literature available, and avoid, so far as we can, the unreal and inferior productions contrived especially for school use. Before very little children, of course, we must lay very simple stuff. But we should certainly prefer the old stories, the traditional rhymes, and the old-fashioned games; for these almost always enshrine something that has entered into the life of the race, and the maintenance of a traditional continuity is a thing worth securing. A nation, no less than a family, is the more respectable by reason of the possession, and ultimately the conscious possession, of an ancestry; and Time is a good guarantee of worth. What has persisted has one claim, and a very strong claim, to preservation. This maxim, we may see, covers much more than the choice of books. School songs, as things go, seem sometimes to be chosen for the foolishness of their words and the vapidity of their music. We tend to forget, when we put aside the old songs, that what we, to our shame, are tired of, our children do not know; and that we are robbing them of a rich inheritance merely because we fear the reproach of using material that is "hackneyed." We forget that generations of children renew themselves every year.

We must guard against the flashy and sentimental in literature. It is easy to stir a child to sentiment, and a wave of popular feeling of course soon engulphs our children with ourselves. The quality of any popular sentiment is always doubtful; nay, popular vehemence is always gross and unmeasured. We ought, as a rule, to be very loth to adopt for school purposes literature published under conditions of evanescent public excitement. An infant's nerves must not be rudely convulsed by noise; we do not give our children champagne or brandy-and-soda to drink. There is enough of noble national and patriotic literature handed down to us, fixed and hallowed by time, to render us independent of the products of contemporary passion. We cannot too often bethink ourselves that the atmosphere fittest for youth is quiet and unimpassioned; healthy growth is not possible in a whirlwind or an earthquake. Let us be sure, then, in choosing literature for school, that we are not being led by our own passing emotion and prejudice rather than by consideration of what is best for the steady and restful development of our children. Give us "Chevy Chase," Michael Drayton's "Agincourt," and Scott's "Marmion," and let us leave "The Absent-minded Beggar" for the next century. What Time has consecrated cannot be vulgar; what a breath of popular passion acclaims has no such guarantee.

We do well, then, to choose for school use, when we can, the work of classics. Modern "realism" has no justifiable claims on us for this purpose, for it is precisely the ideal side of child life and development that is the most profitable field for the work of education; we must think more of teaching the child how to think and feel nobly than how to conform himself to common ephemeral sentiments and passions. We should use current events, not as texts, but to illustrate our classics. Let the classics be our text. We can make too much of "what is going on" by filling the school-room with the clack and clash of contemporary events. All honour to the teachers who make their children alert and interested by talking to them wisely about the subjects that fill the public mind from time to time; but the quiet treatment of matters that are beyond controversy, that have entered surely into the whole national life as traditions and institutions, the works of our great writers, poets or novelists or historians or travellers or philosophers—these are the best food for practical "pedagogy."

So much for the choice of material; but how are we to use it when we have laid hands on it? The most pitiful mistake made in school-room procedure is what may perhaps be called the *comminution* of literature, our habit of breaking it, using it mainly as something to be taken to pieces, as something to be talked about, not appropriated and assimilated. We cannot cultivate a love for literature by making of it a series of pegs on which to hang "meanings and allusions." It is possible that Shakespeare and Milton, when they walk in the Elysian fields and compare notes, may feel flattered at the minute commentaries on their works which we give our children to learn; but they would probably prefer that the works themselves should be read as wholes, known as wholes, loved as wholes. And could we assure them, with our hands on our hearts and our eyes on examination papers, that this is so? Even in the primary schools a vicious plan of excessive, and even exclusive, attention to detail is too often followed. We think it of more importance that a child should know the history of the separate words and the "life" of the author than that he should feel pleasure in the story or the poetry. We set him on verbal exegesis from the first, without taking precautions that he should first appropriate the subject-matter. We rarely think of putting him as near as may be in the place where the author wished him to be, that is, at the author's point of view. Surely no considerable passage should be tackled exegetically until the class knows it in the more general or impressionist way. One thing is certain—that our common method develops no love for literature. Excessive explanation is infinitely wearisome.

Again, though it is possible to construct anthologies of prose or verse which may present a series of passages each in itself a small whole, the risk of such a compilation is considerable. It requires great care and truly rare discretion to cut out of a larger work of art a small part that shall stand forward complete in itself. Only a consummate critic can conceive what the great statue of Hercules was from a sight of the broken foot. We ought surely to use self-contained material as far as we can; complete books, complete poems, or, at all events, sections completed and marked out by the author.

We should also be careful to prefer such literature, stories, and pictures as invigorate life, not

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such as depress it. Lugubrious, sentimental stories and poems, death-bed scenes, tales of bloodshed and mean crime — such things as these lower the moral and spiritual vitality of the sensitive and stir the rest to an idle enjoyment of mere emotion, if not to worse. It is, after all, a sound rule of criticism in all stages of development to judge a book by its spiritual effect. Does this novel or tragedy (for instance) leave me with a fuller sense of life, a greater respect for it, admiration for human dignity, a feeling of its significance? If it does not, this novel or tragedy need not be read again. The sadness and terror of literature should purify and strengthen. If they do not, they are vicious.

And finally, as teachers with an intelligent knowledge of our business, we must make a stand against the desiccation of our curriculum. We shall bitterly regret the vulgarising of our national habits of mind if, as some would have it, our curriculum is jerrymandered in the interests of unsound and unsatisfying laboratory "science"; and if the things that most concern us in human history and human nature and human thought, and that lie ready to our hands all around us, are allowed only a tiny place by way of favour. Teachers must stand together against the specialist, reminding him, as Matthew Arnold never tired of saying, that we are dealing with children, and mostly little children. We have no right to cut them off, in the days when spiritual nurture and expansion are of the highest consequence, from the most precious heritage of their kind. English literature as a school "study" may fizzle out stupidly into mere philology and antiquarianism; treated as a discipline, as something of real moment to life, it is one of the finest and cleanest of the instruments in the tool-bag of the teacher. Although we know to our cost that we cannot exclude from the school some consideration of how to get a living, we ought not to be bullied or tricked, or even policed, into sacrificing the means of life to the means of livelihood.

BI-MANUAL TRAINING IN AMERICA.

By RUTH M. DAY.

WE have all heard a good deal of late years about systems of bi-manual training, though we are so used to seeing expositions of such methods illustrated by pictures of small children drawing circles and other forms on blackboards and sheets of brown paper that we have, perhaps, sometimes been tempted to look upon them as being to all intents and purposes identical with a kind of gymnastic drawing, which, however interesting and even amusing in itself, has little bearing on school work outside the kindergarten.

A visit to any of Mr. J. Liberty Tadd's schools, or a brief study of his methods, would very quickly dispel this illusion. Mr. Tadd is no mere dilettante who has propounded a new theory or had a bright idea; he is himself a teacher, and the system which he has built up is based upon observations made within his own experience, and has been put to the test of practical application pretty well every day for the past fifteen years. As Director of the Public School of Industrial Art in Philadelphia, Pa., he has a large number of pupils through his hands every year, from children of four and five years old to boys and girls of fourteen or thereabouts, while, as Director of Manual Training in the Roman Catholic High School in the same city, he supervises the instruction given to boys between the ages of thirteen and eighteen who have not been taught on his system before.

He starts from the usual standpoint, and argues, like other advocates of bi-manual training, that for the proper development of the brain, as well as for the increase of manual power, both hands should be trained—not necessarily trained in exactly the same way, or always to perform the same operations, but in such a manner that the individual has power to use them with equal ease and freedom, instead of being mainly, or, as too often happens, almost entirely dependent upon one.

With this end in view, Mr. Tadd, instead of beginning by teaching his students drawing only, instructs them all from the first (or, to be strictly accurate, all those who are tall enough to be able to swing their arms freely over a low bench) in drawing with both hands, modelling and wood carving. He chooses these three processes with a definite purpose. He considers that by working with a pencil, in a soft medium like clay, and in a hard one like wood, the hands become accustomed to making those different kinds and qualities of elementary movements which are at the root of most other movements, and are thus trained in a thoroughly all-round way.

The time at Mr. Tadd's disposal in the Public Industrial Art School is two hours a week for each child. He makes a point, however, of getting those hours consecutively, and he makes his pupils go from drawing to modelling and from modelling to carving in the time. In the Roman Catholic High School, where every boy spends three hours a week in the manual training classes, the time is broken into two periods of an hour and a-half each; but in the elementary classes each student's time is divided, as in the Public School of Industrial Art, pretty equally between drawing, modelling and wood-carving. The earliest lessons of the drawing class are devoted partly (as in Mr. Ablett's method) to teaching the pupil to measure with his eye instead of depending upon his ruler, and, after a little preliminary drilling, the boys are taught to draw flowers, to copy details (or units, as they call them) of the different styles of historic ornament, and to make from these "units" arrangements of their own (Mr. Tadd, by the way, calls them designs) to fit given spaces. Of course, in the very early stages of the work the lads have to copy from the models set before them; but, after that, the students are generally given a sug-

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gestion or a "unit" which they are expected to work up for themselves. This applies also to the modelling and the wood-carving classes. A good deal of blackboard work is done (indeed, practice at the blackboard forms part of every drawing lesson), and for this the pupils use both hands, as they do also for some of their drawing on paper, though they are not encouraged to draw always with both hands. The two-handed drawing is looked upon as drill work.

I spent a whole morning (under Mr. Tadd's guidance) in the Roman Catholic High School, and while I was in one of the class-rooms some of the elder boys were drawing on the blackboards attached to the walls of the room. Mr. Tadd told one of these boys, who had been under instruction for about four years, and who drew with great ease and freedom, to make some difficult lateral curves with both hands; the result, though fairly satisfactory, did not please the master, and he turned to me and explained that the student had probably not practised that particular movement for six months or so. He then asked the lad how long it was since he had tried it. "Oh!" was the reply, "I guess it's about three years." This goes, I think, to prove that what the pupils learn is not a mere passing trick, but real mastery and control of their hands.

Woodwork and mechanical drawing form the last step of the High School course. In the room devoted to the latter a large number of constructional models is kept, and the walls are hung with the best work of the students, work which, it should be said, is very good for school-work. In the woodwork classes everything is done by hand, and the lathe (which seems still to form an essential part of the equipment of many of the American schools) is not used at all. Mr. Tadd has no belief whatever in teaching people mechanical processes as a means of education, and he broke up the lathes which were formerly in use at the Public School of Industrial Art some fifteen years ago.

It is not only in the regular school course that Mr. Tadd's method has been tried. It has been adapted, with, of course, slight modifications, to night-school work, and is used in several night schools in Philadelphia. Mr. Tadd has also a summer school in the Adirondacks which is attended not only by amateurs but also by quite a number of school teachers.

The method would, therefore, seem to have had, and to be having, a fair trial; and we are surely justified in asking what is the practical result of this training. Do the pupils learn to use their hands better than their neighbours? Does their school-work put them in the way of earning a living, and encourage them to turn to skilled manual work, if such be their bent? Is it good training from the point of view of art?

I saw a good deal of work, more especially drawing and carving, which had been done by the elder boys in the Roman Catholic High School, boys, that is to say, who had been learning on Mr. Tadd's method for three or four years; and it certainly showed far greater facility and freedom than one is accustomed to find in school work. The lads seem wonderfully quick and ready with their hands, and their mechanical work is accurate and well rendered. There seems little room to doubt that the training they have received has made them manually more efficient than the average boy.

From the work I saw, as well as from what Mr. Tadd told me, I should think that undoubtedly boys trained on these methods have, if they feel drawn to devote themselves to callings in which skill of hand is required, a commercial value when they leave school. Mr. Tadd mentioned several prominent firms in Philadelphia who either apply to him for boys or give his pupils the preference when engaging *employés*, and he mentioned several instances in which boys leaving school had at once obtained situations in manufactories or in architects' offices at salaries which (allowing for the higher rate of wages prevalent in the United States) were exceedingly good.

From the point of view of art, the success seems more doubtful. Artistically the work I saw was certainly not great, though it was probably no worse than the greater part of the productions of the same kind. The danger seems to be that such facility as is acquired under the system encourages the pupil just to "fire off" whatever comes first, without stopping, as a less facile person would be forced to do, to consider the best and most satisfactory way of getting what he wants; and that, unless the increase in freedom is accompanied by at least an equal advance in taste and knowledge, and in the appreciation and study of what is beautiful, the student will be likely to produce work which, however good it may be in certain respects, will be in others not merely no better, but positively worse than the work of people of far less accomplishment.

In short, Mr. Tadd has elaborated a system which, though it may not be perfect (and what system is?) and is perhaps not so absolutely unique as he thinks it, is at any rate, besides being characteristically his own, a practical and interesting method worthy of the serious attention of those interested in manual training or in the teaching of art.

Ambidextrous Drawing.—By ambidextrous drawing we imply two things, which are not necessarily the same, though they are interdependent. In the first place, we imply such a training of both hands and arms as shall give an equal facility to each. . . . In the second place, we imply by ambidextrous drawing the representation of symmetrical copies on a vertical axis by drawing the two sides at once, both hands being used. This, even to a beginner, is much more easy than might be supposed; due to the fact that the same nerve centres set in motion simultaneously the corresponding muscles in both arms, and thus the same action can be produced, with regard to a common axis, much more easily than if it were attempted to reproduce two entirely different studies at the same time.—F. F. Lydon.

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THE EDUCATIONAL VALUE OF STAMP COLLECTING.

By the Rev. Alfred Thompson.

ALL classes of society, not excluding crowned heads, have become infected by this craze. The late Tsar of Russia accumulated a collection valued at £150,000. Many, who as schoolboys started collections some forty or fifty years ago, to-day boast possession of some of the world's rarest stamps. In those days a 10-λεπτα in the hand was worth a whole lexicon in the head; nor has the march of time rendered the hobby less absorbing.

A comparison in any school of those boys who collect stamps with those who do not will result very favourably as regards the former. It will be found that the collectors as a class are intelligent, thoughtful and methodical, rarely including a skulker or lounger. To say that stamp collecting has no educational value is to slight the intelligence of this class of boy. No one will suggest that coin-collecting, egg-collecting, butterfly-collecting, does not in each case possess an improving and informing value. Why should no similar advantage attach to stamp-collecting? But, as a matter of fact, such advantage does attach. A stamp from a far country comes to the collector, like a seasoned traveller, with its own tale to tell. Hence the first and most obvious educational value of stamp-collecting is the—

Geographical.

The accretions to a stamp collection come by gradual deposit. To-day one new specimen is added, to-morrow another, the next day a third; and as the countries are usually arranged in the album under their respective continents, a rough idea of the chief political states in the world is unconsciously obtained. Similarly the situation of many an obscure territory or remote island is fixed in the memory, while that bane of the pure philatelist—the endless stamp issues of insignificant and impoverished states—proves to be not an unmixed evil, for the young collector, charmed with the pleasing designs of stamps hailing from places such as Borneo, Hayti, Hawaii, &c., pays special heed to the names and locations of countries whose geographical position might otherwise escape him. From his stamps, too, a boy will learn something of the form of government obtaining in the different countries which they represent. Not always, but generally, he will get a king's or queen's head on the stamps of monarchical states, whilst republics are almost sure to declare themselves in bold type. Colonial stamps invariably bear the hall mark of the power to which they belong. Sometimes the stamp is merely a surcharged issue of the mother country; at other times similarity of design serves as the connecting link, or, failing this, identity of language tells the tale. Or again, a volcano, a palm-tree, a leopard, a llama, a tiger, or some other natural feature will disclose characteristics of the country concerned. On the other hand, a turbaned head will suggest the territory of an Indian or East African prince; a ship or a sea view, an island; a pyramid, Egypt; a crescent and star, Turkish territory; strange hieroglyphics, an oriental land; and all these significant symbols will serve as mnemonic signs to visualise the unseen, and to connect with the notion of places not only a name but a "local habitation."

School geography takes note of the economic usages of various countries; hence it may be observed under this head that stamp collecting affords a knowledge of foreign moneys. The writer, having tested without prior warning a young collector of twelve years of age, was surprised to find that he could name offhand the respective countries using paras, reis, piastres, kreuzers, kopecs and hellers, and that he had also some knowledge of their value relative to one another and to their several standards. An occasional invitation to bring stamp-albums into class might result in useful illustrations of the geography lesson. Indeed, it has been tried with excellent results. Or the experiment might be associated with economical arithmetic to throw light on the decimal system of coinage and the value of foreign exchanges. "Here is a 10-ore Swedish stamp, here an Indian 2-annas-6-pies; what is the value in each case as compared with the standard coin of each country? What is the English equivalent of each?" Or again, "In what countries do they use bani, fillers, stotinki, shahi and candareen respectively? Show me stamps in each of these values."

Historical.

One of the first discoveries made by the young collector is that stamps fall into two principal divisions—obsolete and current, of which the former are necessarily more rare, and therefore more prized. From current stamps he picks up a quantity of miscellaneous information of an historical kind. He learns something of reigning monarchs and of the events of their reigns. He will tell you that the Emperor Francis Joseph has occupied the throne of Austria for a long time, that the Queen of Holland is one of our youngest monarchs, that Spain has a boy king, and he will tell you many other matters—none of them exhibiting any very profound knowledge, it is true—all of which he has derived from constant intercourse with his stamps and catalogues. Jubilees, centenaries, and other commemorative events are impressed on his mind by contemporaneous stamp issues. But it is from his obsolete stamps he learns most. He asks, "Why are they obsolete?" And he obtains replies which reveal particular reasons for the supersession of old issues. Thus he learns that new issues are the result of improved international postal arrangements, or of the inevitable successions of new sovereigns, or of revolutions in government, while kaleidoscopic changes in the political map render

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new issues in some instances unnecessary. He learns that the political history of modern kingdoms is the history of their postage stamps: that the great states are swallowing up the small ones. In Europe alone he finds that numerous states are, like their stamps, obsolete: and he prizes more than ever the stamps of Baden, Bergedorf, Bremen, Brunswick, Roumelia, Hamburg, Hanover, Lubeck, Livonia, Mecklenburg, Modena, Moldavia, Montenegro, Parma, Oldenburg, Poland, Saxony, Schleswig-Holstein, and Tuscany; whilst he wonders how long Bavaria and Bosnia and Herzegovina will retain control of separate postal systems. The kingdom of Italy is a splendid fact in our late nineteenth century, but the stamp collector cannot forget that it took from him Modena, Parma, and Tuscany. A vain search for Saxony stamps of a later date than 1866 impresses on the collector the Austro-Prussian war of that year, when the postal system of Saxony was placed under the control of Prussia. The obsolete issues of Schleswig-Holstein furnish a like explanation. Similarly Bulgaria has absorbed Eastern Roumelia, and Roumania has absorbed Moldavia. The Alsace-Lorraine war stamps issued by Germany in 1870 rouse stirring memories, as no doubt will the Mafeking siege stamps in days to come. The federation of colonies and dependencies will operate in the future as in the past to diminish the number of stamp-issuing countries. In the obsolete stamps of Nova Scotia and New Brunswick we read an interesting page of the annals of our empire, when in 1867 these were merged with Ontario and Quebec in the great Dominion of Canada.

Postage stamps have preserved for us many historic portraits, some of them telling of experiments in goverment, others of political catastrophies: such are Amadeus and Don Carlos, of Spain; Don Pedro, of Brazil; Diaz, Suarez, and the ill-fated Maximilian of Mexico; the late Shah of Persia: and the late-lamented King Humbert of Italy. Then on the United States' stamps we have excellent portraits of Garfield, Grant, and Lincoln; while Franklin, Washington, and Columbus have been called out of the past to add lustre to the gallery. The head of Rajah Brooke on the stamps of Sarawak brings to mind a remarkable personality and a unique story of British pluck and enterprise.

To a limited extent stamp-collecting has a scientific value. Every stamp, as every plant, has its place—belongs to a certain continent, a certain country, a certain issue, and has a certain position in that issue. Classification is inseparable from an intelligent and recreative enjoyment of this hobby.

Stamp-collecting has a decided

Artistic

value. With varying results—some of them eminently successful—an army of designers has been engaged in the production of the world's postage stamps. It is impossible for a thoughtful collector to be constantly handling stamps without becoming interested in design. Heads, emblems, landscapes, figure-groups—each has its peculiar charm. Connoisseurs delight in the exquisite line-engravings and colourings of the early British and Colonial stamps, so superior to the products of modern processes, though some of our latest prints are highly pleasing, especially those in two colours. But one of the most educative influences in connection with design is the occasion afforded for the study of slight differences. When a boy realises that a distinction, however trifling, gives him an extra stamp—possibly a rare one—he is keen to scrutinise every specimen which comes into his possession. And not only does he look for differences which will give him new stamps, he tests each specimen against those he already possesses in order that he may accumulate a collection every member of which is as nearly perfect a specimen as he can obtain. The æsthetic at this point all but merges into the ethical. In turn he will consider the paper, the watermark, the ink, the die. He will count dots and lines and perforations, and balance the claims of tints and definitions. To this end he will requisition tweezers, gauges, magnifying glasses, and all the other paraphernalia of a practised philatelist. The same zeal and concentration expended on botany, geology, or astronomy might make him proficient in a science. Yes, he might perhaps be employing his time better. But of how many other hobbies might not the same be said? He has chosen to collect stamps—the point of this paper is that he is not playing in a barren field. He is cultivating order, precision, judgment. Two stamps are in his hand—size, colour, design, apparently exactly alike. But he is learning not to be deceived by appearances, to suspend judgment until *all* the facts, so to speak, are before him. He scrutinises the stamps and finds this slight difference—one is printed "pfennig," the other "pfennige." He shows you the series of Russian stamps "with thunderbolts" (crossed spears), and the series "without thunderbolts." He notes a letter upside down, a misprint, a misspelling, a difference in type, letters in the corners *v.* stars in the corners, clouds in the sky *v.* no clouds in the sky, a horn on the back *v.* no horn on the back. These and countless other distinctions are dear to the heart of the philatelist. To observe and note them may not be worth much of a busy man's time, but to a boy, who needs a playtime more commensurate with his work-time, such a pursuit cannot be wholly devoid of utility nor even of educational value.

Observational Power.—Of new practices that have grown up during the decline of the old ones, the most important is the systematic culture of the powers of observation. After long ages of blindness, men are at last seeing that the spontaneous activity of the observing faculties in children has a meaning and a use. What was once thought mere purposeless action, or play, or mischief, as the case might be, is now recognised as the process of acquiring a knowledge on which all after-knowledge is based.—Herbert Spencer.

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THE LATE MISS CHARLOTTE YONGE ON THE EDUCATION OF GIRLS.

By CAMILLA JEBB.

THE exemplary and talented lady who, after charming at least two generations of English girls, has recently passed away full of days and honour always seems to us to occupy, with regard to female education, a position absolutely unique. Nobody could well have been less in sympathy with the latter half of her own century than Miss Yonge. Her whole spiritual and intellectual life seemed to hinge on what is generally known as the Oxford Movement, in its earlier developments exclusively. It was an avowed maxim with her that no woman ever advances in theology beyond her favourite clergyman. In her own case, politics and social questions might have been added to theology. Since Keble prepared her for confirmation down to the day of her death, no great expansion can be observed in her main principles on these subjects, though in matters of detail even she was not quite impervious to the mighty influence of the Zeitgeist.

So with her convictions on the education of her own sex. She came at last to tolerate, and in a manner to approve of local examinations, girls' high schools, and even women's colleges (if conducted on Church principles). But all the time her heart was back in the former days, which she thought much better than these. Her real sympathies were with the system, or rather, with the chaotic muddle which she so graphically describes in many of her earlier books. The extraordinary characteristic of this attitude is that she started on a much higher intellectual level than most of her contemporaries. The idiotic prejudice, then still rampant, against classics and science for girls had for her no existence. Yet with this really lofty inspiration she combined a lack of the reforming instinct perfectly incomprehensible in so clever a woman. To make this plain, we have only to investigate the state of things on which she lovingly dwells, with scarcely one indication of disapproval.

Let us take, for instance, the educational history of that delightful family, the Mays, in "The Daisy Chain." First and foremost comes a certain Miss Winter, of whom we are told that the family oracle, Mrs. May, pronounced her "an excellent governess for the little ones." It is not easy to see what single qualification she possessed to entitle her to such a panegyric. She has no manners, no accomplishments, no solid learning (apparently even arithmetic and French are unknown to her), no sympathy with children, no understanding of what is necessary for their physical well-being, and not the vaguest notion of teaching. She makes her pupils read aloud extracts from Shakespeare, asks questions about the date of the invention of paper, and considers even the Rule of Three a waste of time for girls.

Next, we have a French master who is quite unable to explain a single grammatical rule of his own language, and is desperately offended because Ethel, the clever girl of fifteen, requires a reason for his corrections of her exercises. Strangest portent of all is Ethel herself, who, without teaching or encouragement of any sort, keeps alongside of her sixteen-year-old brother Norman, a boy of exceptional talents at the head of an excellent local grammar-school. We are indeed given to understand that her Greek and Latin verses were not always guiltless of false quantities; but in other respects there is no hint that her work was inferior to Norman's.

This female prodigy is, however, thought very lightly of by her own family, and is finally persuaded by an angelic elder sister to sacrifice the greater part of her classical studies for the valuable alternatives of hearing speeches from Shakespeare mangled, answering questions about the invention of paper, and writing exercises for the incompetent French master. This step is urged upon her on the ground that a woman should not neglect "the common little ladylike things," and further "that men have more power than women." This last statement, occurring in such a connection, strikes one as what John Stuart Mill would have called a piece of flattery too gross to give pleasure even to the sex whom it is intended to gratify. For Ethel is obviously and infinitely superior to Norman, with whom she is here compared. Although a year younger, and with nothing approaching his advantages, she has done all that he has done, and in addition managed to pick up French, Italian, and drawing, and to carry on a large amount of philanthropic work.

In spite of this check, however, we find Ethel hereafter instructing a younger brother too delicate for school, and turning him out an accomplished scholar, equal, it is implied, to a sixth-form Etonian. Yet all this is taken by her appreciative relatives as a mere matter of course, and neither thanks nor reward accrue to her therefrom.

To a woman who has passed through the severe but wholesome discipline of the classical tripos, and has had opportunities of estimating the work of other women, even the cleverest and best grounded, it is rather difficult to believe in a character like Ethel May. Certainly her type has not abounded at Newnham or Girton. Yet Ethel is by no means an isolated example in Miss Yonge's works, and the authoress does not put her forward as a genius. Were women, then, more learned before the days of examinations? Or has their reputed learning found its real level under the examination test? The present writer has her own opinion on this point. Miss Yonge may perhaps have held an opposite one.

It is true that most of the girl-scholars whom we encounter in these always pleasant stories are a degree less marvellous than Ethel, since they have generally received some sort of classical instruction from father, mother, or gentleman friend. They seem indeed to have been quite unusually fortunate in possessing male relatives with the necessary qualifications. A good many girls in real life find that their fathers and brothers either

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never knew any classics, or have forgotten what they did know, or lack the time and inclination for home teaching. But Miss Yonge was almost bound to strain facts a little in support of her own favourite theory. She was strongly convinced that the ideal kind of education was instruction by fathers and mothers, elder brothers and elder sisters. Such is the method which we find in force in all the model families who abound throughout her books. Even Mrs. May used to teach Ethel, under great difficulties evidently, since the pupil was far in advance of the instructress.

It is indeed passing strange that so clear-headed a person as our authoress should have been blind to the obvious defects of this arrangement. The gift of teaching is by no means universal even amongst those who have specially cultivated it. How can we, then, assume that it is conferred by the mere fact of being a parent, or one of the elder members of a large family? In the case of a woman at the head of a household, innumerable interruptions must occur most detrimental to regular work. Where elder sisters are concerned, there is a natural difficulty in maintaining discipline, especially with boys. Besides, it is an unfortunate fact that unpunctuality, negligence, and slovenly habits of all sorts are far more usual between members of the same family than when dealing with strangers. Unpaid work ought perhaps to be the best, but as a matter of experience it very seldom is. And there seems more than a suspicion of injustice in requiring the elder girls of a family to bestow all their time and energy on labours for which they rarely receive even gratitude.

In spite of Miss Yonge's predilection for teaching by relations, governesses play a large part in her novels. A separate essay might be written on the various classes into which these may be said to fall. There is the old-fashioned governess, *e.g.*, Miss Winter, noticed above. Next the "finishing governess" (is not this term a little vulgar?), a very awful type of which we have a remarkable specimen in "Hopes and Fears." This lady has killed a pupil or two in her time, which is not strange, as her hours of work are from 6.30 in the morning till about nine at night. These points are certainly mentioned with some mild censure, yet we are called on to admire the thoroughness of her knowledge and her conscientiousness in imparting it. Unorthodoxy is her worst fault in the eyes of the authoress. She has an unaccountable objection to believing that her deceased parents are undergoing everlasting punishment because of their doctrinal errors.

Then we have the frivolous governess, of which class the same story furnishes a good example. She is a fascinating girl, well-informed and accomplished, but takes her duties in extremely easy style. She has no scruple about interrupting the schoolroom work when any more attractive occupation offers itself, and will not take the trouble to prepare her lessons, which are in consequence generally useless. Strangely enough, she is supposed to be, on the whole, rather a fine character. This shameful disregard of common honesty, or even gratitude (for her position is an ideally happy one), is treated by the authoress as condemnable certainly, but in no way unnatural or unusual. So little accounted of was the education of girls in those days, and so far was anyone from supposing that it need be taken seriously.

Waste of time, waste of talent, waste of health, one or other of these phenomena forces itself on us at every page. And yet Charlotte Yonge, who by her natural and acquired powers seemed marked out for a pioneer of educational progress to her own sex, for a long time gave all her influence to supporting the old state of things, and to the last looked back on it with regret. A strange paradox, indeed, and one which has scarcely received sufficient notice from the educationists of our own day.

THE NEW EDUCATION BILL (No. 2).

The unfortunate postponement of the Education Bill, which was to have established local authorities for secondary education, together with the condition of things resulting from the now notorious Cockerton Judgment, made it essential for the Government to introduce some short measure to legalise the work of higher-grade and evening continuation schools, if such institutions are not to be closed next winter. To prevent this undesirable contingency, Sir John Gorst introduced Education Bill No. 2 into the House of Commons on July 2nd. The object of the Bill is to enable local authorities to empower School Boards temporarily to carry on the schools in which the instruction found to be illegal has been given, and to sanction the expenses in connection therewith. The new Bill is very short, and consists substantially of two clauses from the previous Bill, to which have been added a few words for the purpose of enabling the Local Government Board to absolve members of School Boards from liability for the illegal expenditure which has been *bona fide* incurred before the passing of the Bill.

Wording of the Bill.

"Where a school board has at any time during the twelve months immediately preceding July 31st, 1901, maintained out of school funds any school or class to the maintenance of which the school fund is not lawfully applicable, the council of the county or county borough within which the school or class is held, or, with the sanction of the Board of Education, any other local authority under the Technical Instruction Act for the district within which the school or class is held, may empower the school board to carry on for a period of one year from that day the work of the school or class to such extent and on such terms as may be agreed on between such council or local authority and the school board, and to supply for the maintenance of the school or class such sum out of the school fund as the council or local authority may sanction. Where any expenses incurred by a school board in respect of such school or class before the said day are sanctioned by the Local Government Board the legality of these expenses shall not be questioned in any court."

The Bill came on for its second reading on July 8th, and in moving it, Sir John Gorst dealt with what he described as the "most exaggerated and inaccurate statements" about the schools affected by the Cockerton Judgment. We cannot do better than summarise his remarks.

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Sir John Gorst's Statement of the Case.

So far as higher-grade schools generally are concerned, there is not one that is in danger either of extinction or of being seriously damaged by the judgment. There are, however, forty-eight higher-grade schools, the upper classes of which form organised schools of science, and much of the work in these is undoubtedly illegal. But only some 900 of the 7,000 children in these schools are receiving advanced instruction, and these are the only ones concerned. These could be provided for by scholarships in secondary schools.

The Board of Education have been advised that it would not be safe to place the limit of childhood higher than fifteen, consequently the school-board rate is not available for the education of boys and girls above this age. There are, above fifteen, only about 3,800 children in the day schools managed by school boards—not a sufficient number to create an educational revolution.

As to evening schools, there are 2,174 separate departments, and it is generally represented that there are some 228,000 students above fifteen on their rolls, out of which number 108,030 are in London schools. But it seems the same students are numbered more than once, and the actual number of students smaller than is supposed. Though many of the classes are engaged in useful work, a large number are chiefly recreative. Evening continuation schools are responsible for much overlapping, for much undesirable competition between free and fee-paying schools, and it would be better that they should all be managed by the Technical Instruction Committees, which have done satisfactory work during the last twelve years. If these committees had the necessary funds there would be no need for legislation, but as they have not, it is necessary to make application for a school-board rate. Three courses are possible. The school board could have its work legalised, and the *status quo ante* be maintained. But this would authorise competition, waste, and extravagance. The work could be undertaken by the Board of Education, but such a course is undesirable for many reasons. The third course is that followed in the Bill.

The discussion which followed brought to light little in the way of new arguments. There was the opinion that the school boards should continue what they have so well begun, at least for another year, until the comprehensive Bill dealing with secondary education has been passed. Opposed to this was the view that the county council committee which is to be the secondary education authority in the future should begin its new duties so soon as possible.

To show the position taken up by both sides, we have extracted from the reports of the debate some of the most noteworthy reasons given against and in support of the policy represented by the Bill.

Against the Bill.

At the conclusion of Sir John Gorst's speech, DR. MACNAMARA moved the following amendment:—"No Bill which proposes to meet temporarily the difficulty created by the judgment given in the Court of King's Bench in the case of 'Rex *v.* Cockerton' can be considered satisfactory which does not directly empower school boards, without the intervention of any other local authority, to continue to carry on for the time being out of the school fund, subject to the regulations of the Board of Education, the work to the maintenance of which the school fund has been ruled not to be lawfully applicable." He said the Government desire that school boards shall be put under the municipal councils in order that they may be truncated in their functions and subsequently superseded. A genuine scheme of municipalisation is a fair subject to discuss, but it is neither fair nor honest to effect the change in a temporary measure brought in to deal with an emergency. Sir Joshua Fitch has expressed the opinion that the Bill carried with it "the repeal of much of the Act of 1870," and that to bring about so great a change incidentally will complicate the consideration of the problem when presented to the nation as a whole.

MR. BRYCE.—It would have been simpler to prolong the *status quo* for a year. The schools could have been kept going by giving a dispensing power to the Education Board or to the Local Government Board for one year. It would simply have been allowing to go on for one year more that which had been going on for nearly thirty years under the repeated blessing and encouragement of the Department. A mere continuing Bill would have been passed with general assent; but such a Bill was not introduced because the Government thought they saw a chance of asserting in this small Bill the large principle which they desire to establish. They have taken a course open to every objection that can be urged against such a temporary Bill. It is imperfect because incomplete in its operation; it is vague and doubtful, leaving many questions open; it is cumbrous, controversial and practically unworkable. And all this because the Government are determined to do something more than deal with the difficulty which the Cockerton judgment created. The Bill also appears to be an inefficient and unworkable measure because the new authority to be created is not really competent to deal with the question. The Vice-President represents the authority to be a technical instruction committee, but the Bill does not mention it. I am told that the London County Council do not intend to act through its Technical Instruction Committee, and I can well fancy that other bodies will take the same view.

MR. GRAY.—We are closing schools to a large number of students, and there is no other place for them to go, and under this scheme there will be a maximum of friction and a minimum of benefit. Hardly anybody knows what the schools are to do in the winter. These regulations should have been established thirty-four weeks ago, so that the local authorities might have made the necessary arrangements. The Government has a comparatively easy task if they will take it up courageously, but so long as they tinker with the subject so long will opposition arise.

MR. CHANNING.—The Bill should be opposed not only because it restricts the facilities for education, but because it introduces fresh elements of friction and discord into the consideration of the educational problem. The Bill is an attempt to strike a deadly blow with an ineffectual instrument at popular control and educational equipment; it is a crime against the children of the country and against national interests.

MR. YOXALL.—The Bill cannot be regarded as an adequate or satisfactory method of dealing with the requirements of the situation. It is to be hoped that when the Bill comes into Committee it will be so amended as to bring it into accord with the requirements of the occasion.

SIR WILLIAM HARCOURT.—If this Bill is stripped of its character of an attack on the school boards, if it is intended simply to remedy the inconvenience and the disabilities created by the Cockerton judgment, then both sides of the House may combine in removing a temporary evil with a view to discussing at a future time what are the best general principles on which education can be founded. Then an endeavour may be made to repair the deficiencies in our system, and to place the people of this country in a position in which they will be able to hold their own with the nations of the world; and working with that object and acting in that spirit, this great question of education may be treated not as a party question and not as an attack on school boards.

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For the Bill.

Sir R. Jebb.—The proposal of this short Bill is to make a continuance of such work as the Cockerton judgment declared could not legally be charged to the school rate dependent on the sanction of the existing local authorities for technical instruction; and technical instruction, under the Act of 1889, covers practically everything except Latin and Greek and elementary instruction in reading and writing. It is a very comprehensive form of secondary education of the modern type. The existing authorities which control it are the present authorities for secondary education, and in proposing to give their sanction the Government are not only adhering to the lines laid down, but are also following the recommendation of the Royal Commission on Secondary Education, which recommended that the higher-grade schools, in so far as they were secondary schools, should be placed not under the school boards, but under the local authorities. It is said that we are impeding the more advanced education of the industrial classes because that can be obtained only at higher-grade schools. But such a statement is contrary to experience and to facts. Experience has shown that large numbers of pupils can and do pass from elementary schools, and that by means of scholarships the latter are made easily accessible to children of the working classes. But though large numbers of pupils from elementary schools are actually transferred by scholarships to secondary schools, the numbers are not nearly so large as they might be and ought to be. The reason is that many clever pupils are induced to stay on at the higher elementary schools when it would be for their educational good to move on to the secondary school proper. It is worth noting that, just as the secondary schools suffer from the competition of the higher-grade schools, so the higher-grade schools themselves sometimes complain that they suffer from the competition of the ordinary elementary schools. Some persons who plead for the educational ladder urge that continuity is desirable. Yes, but in education continuity means progress, and the continuity which these persons approve means marking time. Nothing can be educationally worse for a clever pupil than to stay on at a school of which he has nearly reached the top. What he really needs is to go to a school in which he will receive a fresh stimulus, where he will compete with pupils who know more than he does, where he will find a new atmosphere, and be brought into contact with the larger aims and more elastic methods which distinguish secondary from primary education. It is strange that those who desire this transfer should be regarded as wishing to restrict the opportunities of popular education. The retort to this is that those who wish the boy to linger on in the higher elementary schools, and to receive only an unsatisfactory substitute for secondary education, are really anxious to restrict education.

Sir A. Rollit.—The suggestion that the municipalities will take a course which will lead to friction between them and the school boards is based not only upon inexperience of the municipalities, but also in a large degree upon imagination. If the former Bill had been proceeded with the municipalities would have given it unanimously their support, subject to some reservations as to amendment in Committee.

Colonel Lockwood.—The measure will compel differentiation of the right kind in our education, a task which every civilised nation that has taken the education question in hand has accomplished. If we are to survive in international trade rivalry we cannot afford to dally longer with the question. The Bill is a first step towards the necessary organisation of a national system.

Sir W. Anson.—The Bill should be supported because the Government are bound to find a remedy for the Cockerton difficulty, and because, among the various unsatisfactory remedies which have been proposed, this is the least unsatisfactory. Why educational debates are so unsatisfactory is that political exigencies compel persons who are in substantial agreement to vote in opposite lobbies. Ten men could be chosen from each side of the House who, if shut up in a room together, would in a few days evolve a scheme for the control of primary and secondary education by local authorities which would work well. Now that much of the work done by the school boards has been declared to be unlawful, is it worth while quarrelling as to who was to blame? No one wants the work to be stopped; everyone wants to find out on what terms the work can be carried on; and any bitter political struggle on that question is much to be deprecated. There is much objection to a secondary, or intermediate, eduation authority proceeding from direct election. The Secondary Education Commission objected to such a mode of constituting the authority on the ground that a question which ought to be in its essence non-political would become political. It would become more than political; it would become professional. There are at this moment over 60,000 certificated teachers in the country. They form a very powerful and influential trade union. It is inevitable that this election would be run by the teachers, and the acquisition by teachers of such an influence upon the local authorities as constituted is to be dreaded. I was a teacher too long myself not to have a kindly feeling for those who undertake what I believe to be a great and noble occupation. But the teacher is not a very good adviser; he is not a good authority even in the regulation of study, still less is it desirable that he should be an authority in matters concerning the condition of his tenure, the hours of his work, and the amount of his emolument. It is therefore to be desired to keep the school boards out of the field at present, hoping that when the local authority is constituted the school boards will be strongly represented. Any Government can rely on support from both sides of the House if it makes a serious, determined, and generous effort to bring elementary, intermediate and secondary education under proper authority.

After the debate, the House of Commons decided by a substantial majority that the Bill should be read a second time. The House went into Committee on the Bill on July 15th, and an attempt was made to interfere with the principles involved in the measure. Mr. Channing moved to omit the first sub-section, which enables the local authorities, in the case of school boards which carry on schools or classes to the maintenance of which the school funds are not legally applicable, to make arrangements with school boards to carry on the work of those schools or classes for twelve months, and to apply the school funds to their maintenance.

The debate upon this amendment was to be continued on July 23rd—the day on which we go to press with this number.

THE MODERN LANGUAGE ASSOCIATION.

This Association was founded in the year 1892, and had for its first President the late Professor Max Müller. The first Chairman of Committee was a well-known and successful teacher, Mr. J. J. Beuzemaker; the Hon. Secretary was the Rev. W. Stewart MacGowan, of Cheltenham College; and the Hon. Treasurer, Mr. J. D. Whyte, of Haileybury College. Among former presidents are several headmasters: Mr. H. W. Eve, the Rev. W. Haig-Brown, the Rev. R. S. de Courcy Laffan, the Right Rev. J. E. C. Welldon, and Mr. A. T. Pollard; scholarship is represented by the Rev. W. W. Skeat and Dr. Richard Garnett.

Some time elapsed before the number of members became considerable, and thus enabled the Committee to speak with

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authority as representing the interests of modern-language teachers. The objects of the Association are :—

(*a*) To raise the standard of efficiency in modern languages, and promote their study in our schools and universities and in the country generally.

(*b*) To obtain for modern languages the status in the educational curricula of the country to which their intrinsic value, as instruments of mental discipline and culture, entitles them—apart from their acknowledged scientific, commercial, and utilitarian importance.

(*c*) To provide means of communication for students and teachers of foreign languages, by publishing a journal and by holding meetings, debates, or conferences, for the discussion of language, literature, methods of teaching, &c.

A great deal of valuable work has been done by the Association in the course of the last nine years, and there are now 357 members in every part of the United Kingdom and Ireland. The President for this year is the Rev. J. P. Mahaffy ; Mr. F. Storr continues to be Chairman of the Committee, a position he has occupied with conspicuous success for some years ; and the Association is fortunate in still possessing the invaluable help of Mr. W. G. Lipscomb, of University College School, the unwearying Hon. Secretary ; and of Mr. de V. Payen-Payne, who acts as Hon. Treasurer.

An important public meeting, the object of which was "to urge the necessity of giving modern languages a more prominent position in the educational curricula of the country," was held on June 26th, and it is gratifying that so famous a classical scholar as Sir R. C. Jebb, Regius Professor of Greek in the University of Cambridge, consented to take the chair. Among the speakers at this meeting were Mr. J. L. Paton, Headmaster of University College School ; Mr. F. Storr ; Dr. Karl Breul, who has done such splendid work at Cambridge ; Sir Hubert Jerningham, and Mr. Albert Spicer. A full report appears in the current number of the *Quarterly*.

The Association published its first journal, *Modern Languages*, in 1895. Its place was taken in 1897 by the *Modern Language Quarterly*, with which was incorporated the *Modern Language Teacher's Guide*, two numbers of which had been issued by Mr. Rippmann in 1896. In 1898 the publication was taken over by Messrs. J. M. Dent & Co., the name being changed to the *Modern Quarterly of Language and Literature* ; and in 1900 the journal was transferred to Mr. Nutt, and the title *Modern Language Quarterly* reappeared on the cover. As to the contents of the journal, it must be conceded that for a time there was a tendency to make it largely academic ; many of the articles appealed only to a very limited number of scholars, while there were hardly enough articles of interest to the modern-language teacher. This has been remedied in recent numbers, as it has been realised that the readers of the *Quarterly* are at present mainly drawn from the ranks of teachers. A glance at the number issued in May shows that the space devoted to the teaching section is considerably in excess of that given to the "scholarship" part. There are articles on "Lets and Hindrances of Modern Language Teachers at Merchant Taylors' School" (by Mr. F. Storr), "Recent Changes in French Grammar," "Examinations" (criticisms on papers in modern languages set at various recent examinations), "The Scottish Modern Languages Association," "International Correspondence for Schools," "Reform of Secondary Schools in Germany," &c. A useful feature of the *Modern Language Quarterly* is the classified list of books connected with modern languages, in which special attention is given to the requirements of teachers. In addition to details about recent books, there are references to reviews in some thirty journals, with a short statement as to the nature of the criticisms.

The annual subscription is only 10s. 6d., for which members receive the *Modern Language Quarterly* post free. Application for membership should be made to the Hon. Secretary.

THE "COMMERCIAL BUREAU,"[1] OR THE "COMMERCIAL PRACTICE" COURSE.

WHEN commencing to give a distinct bias to the education of a youth intended for business, the first aim should be to give him a broad view of the machinery of business. This is accomplished in the Technical Schools of the West Riding of Yorkshire, and in the foreign Schools of Commerce, by means of the "Commercial Practice Course." This course is practical as well as theoretical, the *correct methods* of conducting the transactions of a large commercial house being taught and simulated, and the operations of a counting-house practised.[2]

The student is first introduced to the operations of a *Home Trade* house, such as incoming and outgoing correspondence ; the preparation of price-lists ; the routine of purchasing and selling goods with the accompanying documents and correspondence, invoicing and forwarding goods by carrier, canal or railway, with comparative rates ; the methods of remitting money ; the mediums of exchange, such as money, post-office orders, cheques, bills of exchange, &c. ; the opening of, and paying into, a bank account, and elementary banking generally ; reading the money and other market reports, together with the more advanced commercial matters relative to the home trade, such as the constitution of mercantile firms and companies, insurance, recovery of debts, &c.—actual or *facsimile* documents being used throughout.

As regards our *Foreign Trade*, the student is taught to make the necessary calculations to enable him to price his goods laid down at the consumer's place of business (in foreign weights, measures and money), and on receipt of orders, how to deal with them, *i.e.*, how to procure the goods, how to forward, ship, insure and invoice them, how to calculate foreign customs tariffs, and to make arrangements regarding foreign exchanges and all necessary subsidiary operations ; in short, the whole of the operations connected with the exportation and importation of goods and the matters incidental thereto, the foreign equivalents of commercial terms and documents being concurrently given. Further, he is taught to construct and use telegraph codes, and to despatch messages in plain language, code and cipher. As regards shipping and freights, he is taught something of freight reports, of chartering ships, the meaning and uses of a bill of lading, of a charter party, and the other documents connected with shipping, and also the comparative cost and advantages of alternative trade routes, both as regards transit and transport.

The *correspondence* connected with the home and foreign transactions in the Commercial Practice Course is conducted by the student himself, and that, too, in English, French, German or Spanish where necessary.

In order that correct records of these home and foreign transactions may be kept, the student is taught the main principles of *Double-entry Book-keeping* ; these are the same in every business, and it is only in their application that any variation occurs. The instruction includes the keeping of sold, bought and private ledgers, the dissection or summarising of the subsidiary books, the preparation of balance sheets and profit and loss accounts, and, finally, company, departmental, manufacturing and cost accounts ; reserve funds and sinking funds, depreciation, &c., are also dealt with.

The *Mathematics* accompanying the whole of the foregoing

[1] The above account of a Commercial Bureau is abridged from a full description which will appear in a work by Messrs. Hooper & Graham, entitled "Commercial Education at Home and Abroad," to be published shortly by Messrs. Macmillan & Co., Ltd.

[2] See "Modern Business Methods—The Home Trade," 2s. 6d., and "Modern Business Methods—The Import and Export Trades," 3s. 6d. By Messrs. Hooper & Graham. Also "*Facsimile* Business Forms and Documents—No. 1, The Home Trade," 6d No. 2, "The Export Trade." (Macmillan & Co., Ltd.)

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transactions are also thoroughly taught, the shortest methods of calculation and approximation being adopted concurrently with the more rational methods. The metric system is, of course, insisted upon, because of its great importance in foreign trade.

The plan followed in the West Riding of Yorkshire is to take all the pupils simultaneously and step by step through the operations connected with a transaction, or series of transactions, under the guidance of the teacher, actual or *facsimile* documents being used. Later the pupils exercise their individual judgment, as principals of firms, as to the manner of carrying through operations connected with tasks set.

At Neuchâtel *each group* of students represents a house of business. At Lyons *each pupil* represents a house of business and works independently. At Zurich and at a Paris school actual business is done on the account of the school.

Such is a brief outline of the Commercial Practice Course, which not only explains the relationship existing between the operations themselves, the documents used and the records kept in the books of account, thus simplifying and facilitating the keeping of home and foreign accounts, but also paves the way to the study of all other branches of commercial knowledge,

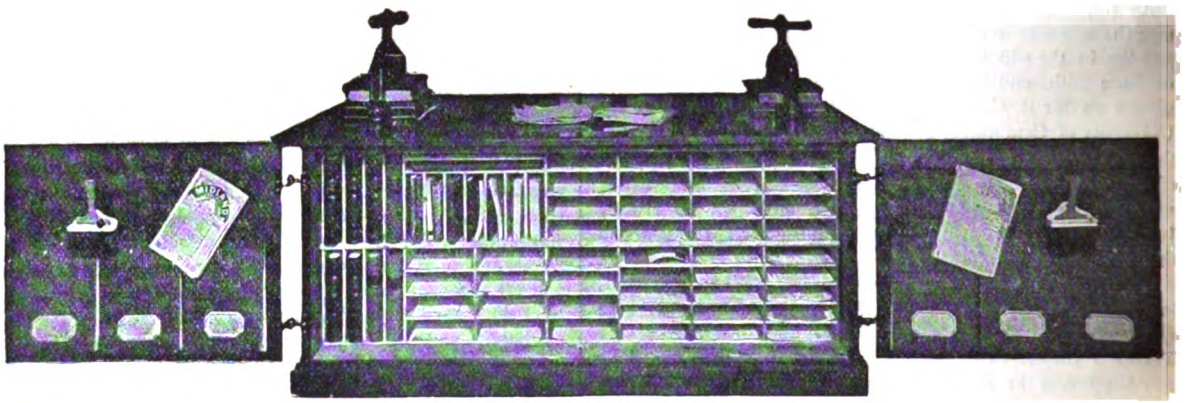

FIG. 1.—Commercial Practice Lecture Desk.

and helps the student to understand the interdependence of the various sections of the work and the intrinsic value of each, while at its conclusion a student is able to import, export, transship and bond goods, as well as to distribute them in bulk in his own country.

For instance, in the West Riding, after the students have learned the correct methods of conducting the individual operations, they are made to apply this knowledge practically by carrying through, from start to finish, such transactions as, say, the importing into Bradford of wool from Australia, the Cape or South America, and later exporting the manufactured cloth, yarn, &c., back again or to other parts of the world, distributing the surplus within the United Kingdom; and the importation and sale of cotton, tea, coffee, sugar and other commodities.

Commercial Arithmetic in the Commercial Practice Course.

The students are trained to aim at excellence of methods for obtaining correct answers—quickness of reasoning and neatness in working receiving their due attention; the various links of the chain of reasoning are placed in the centre of the page and mere mechanical work aside. A sufficient number of words, usual abbreviations being allowed, are always used to clearly point out the line of reasoning adopted, that the work may be intelligible. Reasons are required to be given briefly and to the point. A special manuscript book is kept for this subject.

In any examination the clearness of the course of reasoning adopted and the legibility and neatness of the working, the whole of which should in every case be shown, should be taken into account, in addition to the correctness of the answers; but reasons should be given briefly and mere mechanical work may be placed at one side of the paper.

The very special character which should be given to the instruction in the commercial arithmetic which accompanies the operations connected with the home, import and export trades is often lost sight of, and it is considered essential that teachers of this subject should give evidence of an adequate acquaintance with the varied operations of commerce, as well as with the processes of arithmetic, before being allowed to conduct classes.

Book-keeping in the Commercial Practice Course.

In book-keeping, the reason for keeping each book, also the information to be derived from it, or from each set of columns contained therein, and the specific value to a trader of every account, as say a "banking account," and the advantage of keeping departmental trading and subsidiary profit and loss accounts over general accounts, are made clear.

Instruction and practice are given in the best methods of keeping the specified books, and in each stage the principles on which those methods are based, and the relations of each book to the other books are explained, so that the students may have an intelligent comprehension of the reasons for each step taken. The difference between single entry and double entry and the detailed advantages of the latter over the former are clearly defined.

The teacher previously prepares notes on the subject to be dealt with and delivers a short lecture on the same, and, as the lecture develops, carefully illustrates on the blackboard every point raised. Questioning and recapitulation receive adequate attention, and accompany and follow each lecture, so that the teacher may ascertain whether the new matter has been firmly impressed on the minds of his students. The heading of each lecture is always placed on the blackboard that the students may grasp the object of the lecture, and on all occasions the blackboard is freely used.

At the commencement of the session, students taking the elementary stage are kept at the waste book, journal and ledger (*i.e.*, *examination book-keeping*); during which time they journalise every transaction, post every entry in detail from the

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journal to the ledger and evolve trial balances. After being kept at this work for not more than fifteen lessons, the students are introduced to *practical book-keeping*, *i.e.*, to the labour-saving methods adopted in actual business, and are taught to dissect or summarise the various entries made in the sold and bought day-books, &c. Students in the elementary stage are not as a rule required to work out the exercises beyond the trial balance; this gives the students more time and opportunity to acquire a satisfactory knowledge of the practical working of the subsidiary books and the ledger.

Each class in this subject is taught collectively; a portion of each lesson being devoted to the explanation of principles, transactions, and terms, and a portion to the elucidation of difficulties met with in the home work; the class is questioned as to the correct way of entering up each transaction, and the reasons for this.

FIG. 2.—Commercial Student's Desk.

Genuine invoices, paying-in slips, cheques, bank books, receipts, counterfoils, statements, credit notes, delivery notes, promissory notes, bills of exchange, and other commercial forms and documents are obtained, and are submitted for the students' inspection when explained.

Each student has a text-book and is provided with a copy of special exercises, and exercise books on the lines of the model set[1] approved by the Technical Instruction Committee of the County Council for the West Riding of Yorkshire are adopted for the work of elementary and intermediate classes, and used from the first lesson.

Home work brought by the students is corrected in red ink by the teacher, in the intervals between the class meetings, and the more common mistakes pointed out to the class as a whole, together with the corrections. The teacher finds it therefore most convenient to work through the exercises himself in the first place, and requires the students at the commencement to hand in their home exercises in draft for correction, say on ruled foolscap sheets, and only to enter them into the ruled exercise books after having been examined and corrected by the teacher. At the end of the course the student is thus provided with a correctly entered set of accounts for reference as needed.

[1] May be obtained from C. E. Dodgson, publisher, Kirkgate, Wakefield.

Special Desk.

The West Riding Lecture Desk (Fig. 1) for the Commercial Bureau Course was designed by Messrs. Hooper & Graham, and the design given to Mr. George Blakey, office furniture manufacturer, Bairstow Square, Wakefield, who has, we understand, registered it. The desk is supplied by Mr. Blakey at a cost of £16 10s. It is in use in a number of the technical schools of Yorkshire where Commercial Practice Courses have been organised. The students' desks (Fig. 2) can also be obtained from Mr. Blakey at about 18s. each.

INSPECTION OF SECONDARY SCHOOLS.[1]

I.—The Board of Education will be prepared to conduct an inspection under Section III. of the Board of Education Act, 1899, on the following conditions, upon receiving an application for such inspection from the governing body of the school. The Board cannot undertake to arrange for an inspection to take place in less than two months from the date on which the formal application for inspection is received. The inspection will cover (*a*) the administration of the school, (*b*) the condition of the school buildings and (*c*) the education given throughout the school:—

(*a*) For the purposes of the administrative inspection there will be a conference between an inspector and the governing body.

(*b*) The inspection of the school buildings will include sanitary inspection, for which purpose a sanitary expert may, in special cases, have to be called in. It will also include an inspection of all boarding-houses conducted by the governors or under their license, or by any member of the school staff, and of the provision for recreation.

(*c*) The educational inspection will include all the subjects comprised in the curriculum of the school.

Where the school is in receipt of grants from the Board the inspection will be combined with that required for the assessment of the grant. The charge for inspection, based on the ordinary curriculum, will be as follows, viz.:—For a school having not more than 50 students, £5; for a school having more than 50 students and not more than 75, £7 10s.; for a school having more than 75 students and not more than 100, £10. And so on.

In assessing the charge but half the above rate will be payable in respect of those students in a school who are in excess of 400; and a further reduction at the same rate will be made in respect of all students who are in that department of a school which is conducted as a School of Science.

A minimum charge of £5 will in all cases be made.

The Report of the Board on the efficiency of the school at the time of inspection will be sent to the governing body and to the head-master or the head-mistress of the school, and also to the county council, if that body contributes to the cost of the inspection under section 3, sub-section 2, of the Act. The report, if published, must be published in its entirety.

The following are among those who have undertaken to act as

[1] From the "Directory of the Board of Education" (Secondary Branch).

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occasional Inspectors under section 3 of the Board of Education Act, 1899:—Miss A. J. Cooper, Dr. Gow, Mr. James Headlam, Mr. F. E. Kitchener, Mr. H. Millington, Mr. G. W. Rundall, Mr. Arthur Sidgwick, Prof. Withers, and Mrs. Withiel.

CURRENT GEOGRAPHICAL TOPICS.

By Dr. A. J. Herbertson, F.R.G.S.

The Antarctic Expeditions.

This month or next, three or four expeditions will sail from north-western Europe for the Antarctic—a British, a German, a Swedish, and probably a Scottish. The south-east and south-west passages were among the early Portuguese and Spanish discoveries, and so no great commercial impulse forced adventurous voyagers far into the Antarctic, as it did into Arctic waters. From time to time whalers in the eighteenth century penetrated far to the south. Captain Cook dispelled the belief in a vast southern continent extending as far north as New Zealand. Towards the middle of last century the great expedition of Sir James Clark Ross added much to our knowledge of these southern seas, and penetrated to 78° 10′ S. south of New Zealand. Borchgrevink reached 40′ farther south in the same region in 1900. The Belgian ship *Belgica* spent the winter of 1898 in the ice south of South America.

None of these visitors, however, have seen more than the outskirts of the Antarctic, the veriest fringe of a region as large as Europe. The distance from Graham Land, the farthest north point of Antarctica opposite South America, to Wilkes Land, the farthest north point south of Australia, is over 3,000 miles, and almost as far as from the English Channel to the Equator.

The edge of the ice was encountered as far south as 78° 34′ by Borchgrevink, south of New Zealand; and on the opposite side, south of the Atlantic, Weddell reached 74° 15′ in open water. The distance between the two shores of a possible continent here cannot be more than 1,850 miles, very nearly that from the north of England to the Tropic of Cancer.

The known Antarctic lands approach or extend beyond the Antarctic circle in three regions—(1) In Wilkes Land, south of Australia; (2) Graham Land, south of South America; and (3) Enderby Land, a little to the east and south of Africa. Between (1) and (2) the Pacific Ocean stretches far to the south beyond latitude 78°, where Ross reached his farthest south, and this we may call the Ross Sea in the widest sense. Between (2) and (3) similarly the Atlantic extends far to the south beyond Weddell's farthest in 74° S., and this is the Weddell Sea. Between (3) and (1) there is no similar extension of the Indian Ocean, which is thus more limited by land in its southern as in its northern bounds than either of the other oceans.

Sketch map of Antarctic area, showing supposed outline of the Antarctic continent, and icebergs proceeding from it. The upper half of the map includes the British field of work; the lower half is that assigned to the German expedition.

Hence it is easy to remember the main features of the topography of the Antarctic region. The northern protrusions of the land lie opposite the southern limits of the continents, and are narrowest where these are narrowest (*cf.* Graham Land and South America) and broadest where these are broadest (*cf.* Wilkes Land and Australia). The great seas between these projecting lands are widest where they are the limit of the widest ocean, for the Ross Sea is part of the Pacific, and they are narrowest, and perhaps extend also farthest south, where they are part of the narrowest ocean, which extends farthest north, for the Weddell Sea is part of the Atlantic. The southern limits of the Indian Ocean, like the northern ones, are formed by a series of peninsulas (or it may be islands in the south).

The vast Antarctic region is covered with ice which forms an ice wall at the margin, from which great table-shaped icebergs, 200 to 300 feet above the sea, break off. We do not know what underlies the ice, whether a great continent or a number of archipelagoes. The few rock specimens obtained and the deposits dredged from the bottom of the surrounding seas are mainly crystalline, those from Wilkes Land resembling Australian rocks. Active volcanoes exist in Victoria Land and in Graham Land. Dr. Ritter has suggested that Wilkes Land is a continuation of Australia, and the Erebus and Terror volcanoes a continuation of New Zealand. The Pacific, we know, is bounded by "a ring of fire." The Graham Land volcanoes may be a continuation of those of the Andes, and Professor J. W. Gregory has suggested that the South Pacific coast may also be bordered by volcanoes.

The British expedition has been organised by the Royal and Royal Geographical Societies. It will sail in a vessel specially designed and built at Dundee, where whaling vessels are still made. It has been named the *Discovery*, and its sphere of operations will be in the southern margin of the Pacific and the lands south of Australia. The ship will sail to either Melbourne or Lyttleton (Christchurch), New Zealand, whence it will proceed with three years' supplies on board to the edge of the

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pack and force its way, probably in December, to open water in the south. During the period when the sea is unfrozen, after fixing on a suitable place to winter, probably on the east of Victoria Land, the ship will proceed eastward to inspect the great ice barrier along which Ross sailed for 300 miles, see if land exists at its eastern limit, and then return to winter quarters. Here either the ship will remain with all her company or a party will be landed to spend the winter somewhere between Capes Johnson and Crozier, while the ship will make a magnetic survey of the South Pacific beyond the ice, returning to Lyttleton or Wellington in time to proceed to Victoria Land the following season. From this land station parties will set out eastward towards the magnetic pole, southward towards the geographic one and to explore the volcanic region. In the southern autumn of 1903 the party will leave the Antarctic and return home after completing oceanographic and magnetic work in the South Pacific. It is hoped that enough money will be subscribed to permit a relief vessel being dispatched in 1902. The expedition will he commanded by Captain Scott, R.N., and two members of the Jackson-Harmsworth expedition are on its staff—Lieutenant Armitage and Dr. Koettlitz.

The German sphere of influence lies south of the Indian Ocean. Proceeding by Cape Town to Kerguelen Island, the German ship will sail eastward, probably to 90°, in order to make oceanographical studies in still unknown seas, and then it will proceed southward to the west of Wilkes Land. The little known region round Kemp and Enderby Land will be explored, and the return journey will be made through the Weddell Sea. The leader is Dr. von Drygalski, who is distinguished for his studies of Greenland.

The Scottish expedition, which will probably start in September in a whaling ship, will be fitted out mainly for oceanographical work. The leader will be Mr. William S. Bruce, who has had previous experience of Antarctic as well as of Arctic exploration. The expedition will go to the Falkland Islands, which will be its base, sail eastward as far as the Sandwich group, E.S.E. of South Georgia, then strike southward, taking soundings on the meridian of 30° east, across the Weddell Sea, and land a wintering party on the east of Graham Land. The ship will then sail northward, spend the winter in oceanographical work and return for the wintering party the following summer.

Dr. Otto Nordenskjold, whose excellent work in Tierra del Fuego is well known, will command the Swedish expedition. The region of the South Shetlands and Erebus Gulf will be specially studied.

The Scottish and Swedish expeditions, will remain in the Atlantic, the German one will be chiefly concerned with the south of the Indian Ocean, and the British one with the south of the Pacific Ocean.

NOTE.—The Royal Scottish Geographical Society published a special Antarctic number in October, 1898, which contains an excellent map and valuable bibliography. The same map accompanies a reprint of Sir John Murray's Royal Society paper on Antarctic Exploration, issued by the Royal Geographical Society. Sir Clement Markham's addresses to the Royal Geographical Society contain many references to Antarctic exploration, and in the July number of the *Geographical Journal* he reviews various ways of penetrating the South Polar regions. Mr. Bruce gave an account of the proposed Scottish expedition in the *Scottish Geographical Magazine* for June, 1900.

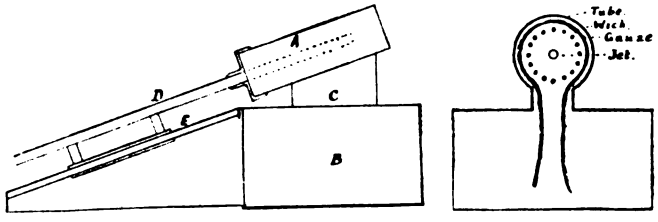
Is there an Antarctic Continent?—The form and structure of the antarctic icebergs indicate that they are built up on, and have flowed over, an extended land surface. As these bergs are floated to the north and broken up in warmer latitudes, they distribute over the floor of the ocean a large quantity of glaciated rock fragments and land detritus . . . . The fossil remains which have been found in the antarctic indicate in these areas a much warmer climate in past times. We are thus in possession of abundant indications that there is a wide extent of continental land within the ice-bound regions of the southern hemisphere.—Sir John Murray, K.C.B.

A KEROSENE-OIL BLOWPIPE.[1]

THIS blowpipe has been devised in order to utilise the combustion of kerosene oil for the production of a blowpipe flame, suitable for glass blowing and other purposes, so as to combine the advantages of a gas blowpipe while independent of a supply of gas. The need of such a blowpipe is obvious where gas is not available.

At first it seemed possible to use one of the vegetable oils, such as cocoanut oil, by burning it in a modified form of glass-blower's "tallow lamp," but the tendency of all such oils to char at the temperature of the blowpipe flame renders them useless as a continuous source of heat unless the wick is being constantly trimmed. As kerosene oil does not char, it was selected for this purpose; its combustion, however, in a lamp without a chimney requires special arrangements if it is to give a solid, steady, flame, easily regulated and completely under control of the operator, and it was only after many unsuccessful attempts that a lamp was constructed which fulfils all the requirements of the case.

As it now stands, the blowpipe consists of a metal tube, *A*, 1½ inches long and ¾ of an inch in diameter, fixed at an acute angle above the oil holder, *B*, with which it is connected by a flattened tube or wick holder, *C*. A wick about 1 inch wide passes from *B* through *C*, round the inside of *A*, and back to *B*, leaving the central portion of the tube open. The wick is protected and kept in its place by a tube of iron-wire gauze



projecting beyond the wick on either side. The lower end of *A* is closed by a perforated cap, through the centre of which the blowpipe jet, *D*, passes. This is made to slide backwards and forwards on the rail, *E*, so that its position in the centre of the tube can be regulated.

A thread of asbestos dipping in the oil passes up the wick-holder and projects just in front of the wick at the open end of *A*.

To use the lamp the asbestos thread is first lighted; this furnishes a small flame at the mouth of *A*; if now the bellows be worked, combustion takes place within *A* on the surface of the gauze. The size of the flame depends on the position of the jet, since combustion is practically limited to that portion of the wick exposed to the air current; thus when the jet is pushed up to the open end, a fine-pointed flame is produced; as it is drawn back into the tube the flame increases in size, giving a roaring flame when the whole length of the wick is exposed. On stopping the air supply the flame immediately subsides to its original size, and burns quietly at the mouth of the tube. In this way the flame is under complete control, and gives no trouble when not in use.

Experience has shown that the wick remains in good condition for a long time; in one case it was found to be only superficially blackened after the blowpipe had been in use for several weeks.

The dimensions given above are those which the author has found most useful for general purposes; but with a wick 2 inches wide, contained in a tube of 1-inch bore, a much larger and

[1] Abridged from a paper by Dr. A. Richardson in the *Proceedings* of the Chemical Society, No. 239, June 15th, 1901.

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more powerful flame is obtained, suitable for large pieces of glass-blowing, although it is not so easily regulated for the production of a small flame.

The efficiency of the blowpipe has been proved by long use; with its aid all the ordinary glass-blowing which before was out of the question without gas may be done.

ITEMS OF INTEREST.

GENERAL.

THE Grantham Grammar School case, which will still be fresh in the minds of our readers, is not yet a thing of the past. The inquiry and decision of the Charity Commissioners was not the final act of the drama. The Executive of the Assistant-Masters' Association have caused a writ to be served on the Clerk to the Governors of the School, for the purpose of testing the right of the dismissed assistant-masters to a full term's notice. It is certainly time that a definite ruling was obtained as to the legality of dismissing summarily a whole staff of assistant-masters on the appointment of a new headmaster. We shall await with great interest the result of the steps taken by the Assistant-Masters' Association.

A GLANCE through the questions set in the general elementary science papers for the June Matriculation Examination of the London University is enough to establish the justice of our remarks last month as to the value of the training in the methods of science which a student who is to do well in the examination must receive. The questions to which reference is made are in many cases exactly suitable for a "general knowledge" paper. "Why does smoke go up a chimney? Give a detailed explanation of this." "What is it that fixes (*a*) how large a gallon must be; (*b*) how long an inch is; and (*c*) what the duration of an hour is?" It is unnecessary to give more examples. These are questions of the kind which every educated person should be able to answer. Yet, if the compulsory science paper in the Matriculation Examination is abolished, we shall soon have many graduates to whom such simple facts are mysteries. But we hope better things of the Senate—we cannot believe that they will grant a degree in any faculty to persons completely ignorant of the fundamental laws of nature.

ONE good result which will probably follow, so soon as county councils have charge of the evening continuation schools which fall under the Cockerton judgment, is the disappearance of the so-called "technical" classes where, under the pretence of receiving technical instruction, the student is re-learning what he has forgotten of his day-school training. Anyone familiar with the reports of the different technical instruction committees has read again and again that much of the time of technical students in their first year's course of study is taken up in re-learning arithmetic, elementary algebra and other school subjects. The properly-prepared student has in the past suffered for this, the time of the teacher—which should have been given to technology—being wasted in doing again the work of the elementary school. When the evening continuation schools are under the control of the Technical Instruction Committee, the transference of the ill-prepared student to the continuation school, being easy, will actually take place, since the lecturer will be able to do more than make a recommendation.

WRITING to the *School Guardian*, Mr. Gregory Smith raises an important question in connection with the prevalent scholarship system. The educational ladder, from the gutter to the university, is on theoretical grounds a very desirable arrangement. But how does it work out in practice? Boys of more than average ability are transferred from an elementary school to the local grammar-school, and remain at school for several years longer than their former companions. At the age of sixteen or seventeen they find themselves possessed of a fair education and little inclination for manual labour. With little money and no influence, they have no hope of entering a profession, and but a small chance of a suitable opening in commercial life. To educate the son of artisan parents in this way and to then leave him to his own resources is a doubtful kindness. As Mr. Smith contends, the education should somehow be supplemented by assisting such a lad to an appropriate entry into some capacity for which he is fitted, which later will provide him with a means of livelihood.

RESOLUTIONS innumerable have been passed by expert bodies, such as the Modern Language Association, that no examination in modern languages is complete without an oral test. The Local Examinations still maintain that this is impossible except for the honours candidates: while the College of Preceptors make an oral test optional, and that for first-class candidates only. The University of London inaugurated three years ago a system that might well be copied by all other examining bodies. For the Intermediate Arts Examination, at which over five hundred candidates present themselves, an oral test is compulsory on all candidates in modern languages. This test consists of the reading aloud by the candidates of a small portion of French prose, which is followed by a few questions on the subject matter. In about ten minutes a competent examiner can discover the value of the candidate; and the whole number can be examined by a few men in six hours. We do not contend that this is perfect, but at any rate it is a beginning; and as it has been in use for three years, there is no excuse for other examining bodies not making some such test compulsory. The old excuse that they could not find sufficient competent men is now shown to be vain, for the University of London has found them.

ENGLISH schoolmasters are getting a little tired of comparisons between English and German methods of education, and not unnaturally, for they have heard and read rather much of the subject during the last ten years. Yet it would interest many of them to read an article in the current *Contemporary Review*, by Mr. R. E. Hughes, on "The English School and its German Rival." The good points of both are very fairly enumerated, and a number of usual hints will be found scattered through the interesting paper. There is much truth in the concluding words of Mr. Hughes:—"The real superiority of the German system is neither in the teaching nor the schools, but in that public spirit upon which all rational systems of education must rest. Until our people have been trained to see the criminality of robbing a child of his moral right to a good education by keeping him from school or sending him to the factory too early, or working him out of school hours, we shall suffer. . . . . To secure the penny to-day the English parent denies himself the pound to-morrow."

MANY educationists thoroughly conversant with the conditions of work in training colleges for teachers in public elementary schools have long desired the abolition of the examination at the end of the first year's training. The Board of Education have given notice, in the Code for 1901, that after this year there will only be a single examination during the course of training, namely, at the completion of the second year's work. As a supplement to this notice, a circular has now been issued to training colleges giving particulars of a two years' continuous course of study. An outline curriculum for such a course is attached to this circular, and specimen syllabuses of work in

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each subject will be issued shortly. But these official specimens are only intended as guides; the authorities of each training college, or each group of associated colleges, will be expected to submit the curriculum it is proposed to adopt for the approval of the Board. We observe with pleasure that those students who graduate before or during their course of training will be excused a further examination in certain subjects. With the object of preparing suitable teachers for the various types of elementary schools a considerable choice of subjects is allowed, while to meet the recommendation of the Agricultural Education Committee provision has been made for instruction in general elementary science, including nature study. These new regulations mark a distinct advance.

IT is satisfactory to be able to record the growing importance attached in our public elementary schools to the development of a good physique in the children under instruction. The useful citizen must have a healthy body in addition to a well-trained mind. The Board of Education recognise this fact, and a recent circular issued to his Majesty's inspectors of schools summarises the conditions under which grants for physical drill should be assessed. It should be seen, the inspector is instructed, that the drill teacher has not too many children at any one time. Sufficient space must be allowed for each pupil. Children who are suffering from serious physical weakness should be exempted, and youngsters who have walked a long distance to school be excused. Whenever possible, the exercises are to be taken in the open air, and should the weather be hopelessly bad on the day set apart for drill, the next fine day is to be utilised, and the sacrificed lesson to be otherwise arranged. The effect of the training upon the general deportment and physique of the children is to be the criterion of the success of the teacher, who should be encouraged to assist the formation of habits of willing obedience, orderliness and general smartness. All the hints given to the inspectors seem reasonable and to point in the right direction.

WRITING to *The Times* on the subject of Indian University Education, the Bishop of Calcutta, whose wide knowledge of public-school education at home gives great weight to his opinions, makes certain generalisations which are of particular interest just now, when the constitution of the local authorities to take charge of secondary education in England is being so much discussed. Though Dr. Welldon is writing of Indian Universities, what he says has a wider application. "Higher education in the present day is a science; it demands at least some study, or practice, or experience; it cannot safely be left in the hands of persons who have given little or no thought to it, or have taken it up for a time because there was nothing else which they were particularly wanted to do, or who are trying to combine it with some other pursuit which is properly their own." It is to be hoped that in drafting the Bill, which is next session to have "an early and honourable place" in their legislative programme, the Government will arrange for a generous representation of educational experts upon local authorities.

The *Chamber of Commerce Journal* for July says:—"Our consular reports are constantly bringing most prominently before our eyes the defects in our educational methods and the urgent necessity there is for greater attention in the special training of our youths for commercial positions. In recent reports marked prominence is given to the linguistic disabilities which characterise many of the representatives of our commercial houses. In some cases it is reported that our travellers have not the slightest acquaintance with the language of the country to which they are dispatched, and in other cases their knowledge is so limited as to be almost useless. The disadvantages from such conditions are self-evident. Our consuls point out our weaknesses. It remains for us to see that the faults in our educational methods are rectified."

THE Technical Education Board of the London County Council are offering parents having incomes not exceeding £250 a year another solution to the much-debated question, "What shall we do with our boys"? The Board are providing scholarships tenable at the school of practical gardening which has been established at the Royal Botanic Society, Regent's Park. The scholarships are offered to boys of between fourteen and sixteen, and the selected youths are to receive a three years' training in practical gardening. There is no examination for the scholarships, but parents are required to sign a declaration that they intend their sons to become practical gardeners

THE new "Directory" of the Board of Education gives full particulars as to the conditions under which secondary day-schools may earn grants. We gave early general information on this subject in a previous number, and are glad of this opportunity of amplifying what was then said. Secondary day-schools, under the superintendence of a body of managers responsible to the Board of Education, in which laboratory accommodation approved by the Inspector of the Board is provided, which are not conducted for private profit, may submit schemes of instruction for a three or four years' course in science for forms in which the average age of the pupils is above 12 and provided the pupils are reported by the Inspector as able to benefit by such instruction, but the number of qualified students must be not less than twenty. The time-table of the whole curriculum of the school must be submitted to the Board, showing that it makes provision for not less than nine hours per week of science instruction, including not more than five hours' teaching in elementary mathematics. Every pupil must attend all the yearly courses in the prescribed sequence, except that a student whose previous instruction is equivalent to that given in the course laid down for one or more years may, with the approval of the Inspector, be placed in the year's course above that to which he is held to have attended.

GRANTS will be paid to these schools for each pupil who has received continuous instruction throughout the year, and who has made not less than 240 school attendances in each year, at the following rates:—For the first 100 pupils: for the first and second year's attendance a sum of 50s.; for the third and fourth year's attendance a sum of 70s. For pupils in excess of 100: for the first and second year's attendance a sum of 40s.; for the third and fourth year's attendance a sum of 60s. It is particularly to be noticed that the reduction in the necessary minimum number of hours of science instruction to nine hours a week, including the time given to mathematics, allows of suitable attention being paid to the teaching of modern languages and English subjects—which was scarcely possible under the older "school of science" scheme, when thirteen hours of science instruction was imperative. Headmasters will do well to obtain a copy of the "Directory" for careful study, for it contains a number of qualifying regulations for which we have no space. It is desirable to add, however, that schools applying for and receiving recognition under this arrangement will be held to have applied for inspection under the Board of Education Act, 1899 (see page 297).

THE recent judgment in the Cockerton case made necessary a modification of the regulations under which grants have hitherto been made by the Board of Education to evening schools and classes. A Memorandum and Minute have consequently been issued by the Board. Under the regulations of this Minute grants will be made to (1) evening schools which are public elementary schools for such part of the instruction

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specified in this Minute as may legally be given in such schools; (2) evening schools which are not carried on under the Elementary Education Acts for any such instruction as is specified in this Minute. Evening schools which are not carried on by school boards under the provisions of the Education Bill now before Parliament may receive the same grants as are payable to evening schools not being public elementary schools under this Minute.

The Minute lays it down that to earn grants under the new regulations "the school must not be unnecessary," and it must have adequate local support. The premises must be sanitary and convenient for teaching purposes, and all equipment and appliances satisfactory. The staff must be sufficient and efficient. The courses of instruction and the school fees must be suitable to the circumstances of the locality, and the courses of instruction, as approved by the Board, must be fully and efficiently carried out. No student may be entered or continued on the register of a school who is (1) under 12 years of age, or (2) on the register of attendance at any day school receiving grants from the board. Where it is desired to conduct an evening school as a public elementary school under the Elementary Education Acts, the following supplementary conditions also apply:—The instruction given in the school must be in accordance with the provisions of the Elementary Education Acts. The school must not be held in the same building as an evening school under the Board which is not conducted under the Elementary Education Acts without the express sanction of the Board. No attendances may be counted for grants in any school year in respect of any scholar who has at the commencement of the school year attained the age of 15. All the provisions of the Elementary Education Acts relating to public elementary schools must be observed.

At its meeting on July 11th the London School Board passed the following resolution having reference to the Board of Education Minute dealing with the work of evening continuation schools:—"That the Board regret that the new Minute on evening continuation schools contemplates the practical abolition of all evening school work under school boards, except by the consent of the county councils, by limiting the instruction to pupils not over 15 on May 1st in any year, and emphatically express their opinion that the same educational facilities generally should be granted to English school boards as are granted to Scottish school boards; for example, that there be no restriction of age, and that the subjects be as numerous and varied as taught under the Scottish school boards."

The current issue of the *Public School Magazine*, which begins the eighth half-yearly volume, is an excellent number. Mr. Gordon Home's drawing of the old schools at Harrow and the snapshots of Harrow life are especially interesting; but the whole of the contents are of a kind to please the public-school boy.

The scheme for the reorganisation of the middle schools of Russia, drawn up by the commission appointed for the purpose, has now been published. It provides for the exclusion of Greek and for the restriction of Latin to the four upper classes. On the other hand, courses of instruction are to be introduced in the natural sciences, in two modern languages, and in natural history and geography, while greater attention is in future to be given to the study of literature and mathematics. The Tsar has sanctioned the scheme, and has admitted the necessity for increasing the cultivation of physical exercises.

The Technical Education Board of the London County Council is making arrangements at the Poplar Technical Institute for giving practical instruction in the use of nautical instruments and in marine engineering. A building is being planned to afford accommodation for marine engineering, naval architecture and navigation, and other subjects. Practical classes will be conducted in electrical engineering, especially in connection with ships' lighting. The building is to have a flat roof, on which astronomical observations may be made with such instruments as are used on board ship, and it is probable that a small dome will be provided for an equatorial telescope. Arrangements will be made to provide complete courses of instruction in nautical astronomy for deck officers and petty officers in the mercantile marine, in marine engineering for all classes of persons engaged in the engine works and repairing shops of Thames-side, as well as in naval architecture and the principles of propulsion for young draughtsmen and others engaged in shipbuilding and repairing yards.

The *Builder*, in a recent issue, gave several illustrations of the new Technical Schools at Scarborough, of which Messrs. Hall, Cooper and Davis are the architects. The plans were selected in an open competition in which thirty-six designs were submitted. The completion of the building has occupied about four years. If the instruction given in the school matches the magnificence of the new buildings, the people of Scarborough will have little to complain of in the provision made by its education authority for training its future workmen.

SCOTTISH.

The papers at the Leaving Certificate Examinations which are just concluded have been on the whole eminently fair and reasonable. In many of the papers there were, undoubtedly, questions set to which objection might very well be taken, but, having regard to the liberal options allowed, there is little ground for complaint. Exception must, however, be made in the case of the algebra and, to a lesser degree, of the geometry of the higher-grade paper. The former has given rise to grave dissatisfaction among teachers in the different districts, and has called forth much criticism in the public press. Almost all the questions are of the "trick" order and require a special artifice to ensure their solution. From the examiners' point of view they are exceedingly "neat," but are wholly unfair as a test of the training or the capacity of youths of 15 or 16 years of age. The papers bear every evidence of having been set by a most expert and ingenious mathematician, but one who has had no experience whatever of practical teaching and no knowledge of the capabilities of the average schoolboy.

The Scotch Education Department have issued a circular stating that after this year no purely commercial questions shall be included in the papers for ordinary leaving certificates in French and German. They have been forced to this step by the consistently discouraging nature of the results hitherto obtained in that part of the paper. The inadequate supply of really competent teachers of French and German, the unsatisfactory nature of the methods of instruction in those languages and the early age at which pupils leave school, are the main reasons given by the Department for a state of matters much to be deplored. Should any schools organise advanced commercial departments, separate papers in commercial French and German will be set for such of their pupils as have already obtained higher-grade certificates in those languages, and special leaving certificates will be issued in connection therewith.

Dr. Heard, on "Founders' Day" at Fettes College, referred to the cry for commercial education that was being raised by business men, and opened up rather a new side of this question. Let commerce, he in effect said, open a sure career to a boy,

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and an adequate education would be given by the schools. But, as matters stood at present, there was no sphere which offered so little promise as that of commerce to a boy who has no means of his own, and who has to depend solely on his own powers. The consequence was that Fettes and similar schools sent their best pupils not into commerce, but into the Civil Service, the Army, Navy and the big insurance offices, where the prospects, if less brilliant, were infinitely more sure. Dr. Heard has undoubtedly laid a finger on the weak point in commercial life, and one for which it is almost hopeless to suggest a remedy. But the attention of business men cannot be too often called to the fact which has so often been emphasised in these notes, viz., "not only that education pays, but that it must be paid for."

THE discussion on training colleges and the training of teachers, initiated by Dr. Douglas on the first night of the Scotch estimates, was continued on the second by Dr. Bryce, Mr. Haldane and others. Much support was given to the view that the training colleges should be entirely taken over by the Government, and that they should become the clinical schools for the teaching profession, the theoretical training being obtained in the universities. The inadequacy of the present supply of elementary teachers was also insisted on, and the Government were urged to favour still further the creation of "King's students." The Lord Advocate, in his reply, held out no hope of the Government taking over the training colleges. He found his chief argument for maintaining denominational colleges in the fact that they were *undenominational* in all but name. The Carnegie bequest received generous recognition from all the speakers.

THE Scottish School Attendance Bill, which was brought in as a private measure and adopted and changed (for the better) out of all recognition by the Government, has just passed the second reading in the House of Lords, and the measure may now be regarded as safe. It raises the age of exemption to 14, and leaves school boards the option of exempting children between 12 and 14 from attendance for reasons which they must set forth. It also prevents the casual employment of children from 12 14 years of age after prescribed hours in summer and winter, except with the express sanction of the school board. The Bill is undoubtedly a step in advance, but the exemption powers of the local boards will certainly be abused if the Education Department do not take a firm stand and demand most satisfactory reasons for such exemption.

WELSH.

THE Welsh Language Society, having formulated its suggestions for the methods of teaching Welsh in the various grades of Welsh schools, is now preparing its measures for seeing them carried out. At a meeting of the Provisional Council of the Society lately held it was resolved:—"That it be one of the principal objects of the Society to introduce Welsh into certain schools under a regulated scheme, and to assist teachers and managers financially and otherwise to give the scheme a fair trial." It is further stated that the Society propose to hold a public meeting at Merthyr Tydvil during the Eisteddfod week. It is proposed that on that occasion a demonstration class shall be held, in which a class of children shall be instructed in accordance with the methods put forth by the Society.

AGAIN the advocates of the teaching of Welsh history in schools are disappointed. It is said that neither this year nor last year did the examiners in the history of England and Wales set any questions in Welsh history in the Matriculation examination. This year, it appears, there were fifteen questions, of which not more than ten were to be attempted, and no question on the history of Wales. Now this omission may be justifiable or not justifiable. But the advocates of the teaching of Welsh history in schools would be wise to restrict the scope of their argument. Thus it is said, "There seldom passes an Oxford Honours History examination without reference being made to Wales." Precisely so. The subject, far from being elementary, is judged by the Oxford examiners to involve more strenuous and exacting preparation. There is no doubt that it is an excellent field for research, but it is still a question to be determined whether there is a sufficient body of well-ascertained facts which can be made the basis of an elementary examination.

THERE seems to be some misapprehension with regard to the Science and Art grants which have been placed in the possession of the Central Welsh Board to distribute in the county schools. It is obvious that the new methods of distribution apply in Wales only to the intermediate schools. As Mr. Humphrey-Owen, M.P., the chairman of the Central Welsh Board, clearly states in answer to Mr. Lewis Williams, chairman of the Cardiff School Board, "The Central Board have not and never have possessed or laid claim to any power or authority over any schools outside their own system, and they would most especially disclaim any wish to take any action distasteful to the elementary schools, from which, indeed, nearly 80 per cent. of their pupils are drawn. The whole cost of the inspection and examination required for the additional grants will be borne by the intermediate schools and the intermediate schools alone, who will be recouped by the increase in their revenues which those grants will produce. No additional burden, therefore, will or, indeed, can be imposed on the ratepayers." In connection with the county schools, one school has found the scheme for the South Kensington Department of the Board of Education make such demands on the curriculum that the question has been raised as to whether geography or history would not have to be dropped. Now it is greatly to be hoped that neither of these studies will have to be left out.

THE requirement of instruction in science (including mathematics) to the extent of nine hours a week is, of course, considerable, but it is quite necessary if the teaching is to be adequate. Geography cannot be counted as a science, but physiography can be so counted, and as a disciplinary study physiography can be quite as effective as geography. With regard to the teaching of history, the introduction of science teaching or the extension of the teaching of it makes the study of history none the less, but all the more necessary. One of the last lessons which educationists seem willing to learn is the necessity of all-round studies, or what Herbart calls the provision for a many-sided interest in things. There has been in the past all too little attention given to the teaching of science. We shall not improve matters if we now give attention to science at the expense of neglecting humanistic studies. Both are necessary, and the great problem is to see how *both sides can be adequately represented* and some perspective be found in the materials of school study to form the basis for generally well-informed and well-disciplined youths.

THE number of entries for the Matriculation examination this year in the University of Wales is given as 350. Last year there were 341. Candidates who "deferred" the completion of the examination till this year are 111 in number as against 120 last year. The number who qualify for matriculation in the University of Wales by virtue of some other equivalent examination is 95, whilst last year the corresponding number was 56. This increase is no doubt due to the increasing number of candidates from the county schools qualifying through the Senior Certificates of the Central Welsh Board.

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CURRENT HISTORY.

Great Britain is wanting to revise a treaty made some years ago with the Congo State. The *Times* thus comments: "That treaties must be modified under special conditions, and that diplomacy is ruled by opportunism, may not accord with the strictest rule of justice; but it is manifest that an agreement cannot hold good indefinitely when its observance would imperil national interests, or raise difficulties which, if foreseen, would have been an absolute bar to its ratification." The U.S.A. wants to revise the Clayton-Bulwer treaty *re* the Nicaragua Canal. The *Times* thus comments: "Mr. Foster (one of the advocates of revision) has long been notorious for his enmity to England, and is skilled in that type of diplomacy which is more remarkable for shrewdness than scruple. He now says that it is idle to contend that a nation of 76,000,000 persons is bound by a treaty made when it numbered only 23,000,000. The maintenance of the Monroe doctrine requires the abrogation of the treaty. Mr. Foster was delivering an address to Yale University on obligations of treaties, and this is how the American youth are taught to observe the obligations of treaties and of national faith and honour." The two extracts, which appeared within a week of each other, may be left to speak for themselves as an illustration of how "circumstances alter cases." It reminds us of the *casus belli* of 1792. France having conquered Belgium, "opened the Scheldt," thus introducing Antwerp as a rival to Amsterdam and London. The "closing of the Scheldt" had been maintained for eighty years by Great Britain and the United Provinces, and was called by them the "maintenance of the Protestant liberties of Europe."

In 1778 France and Spain were bound together for international purposes by the great family compact of 1761. France was eager, having lost her North American colonies, to help the British colonies in their revolt. She required the assistance of Spain under the terms of the compact, and Spain was all unwillingly obliged to join in the partition of the British Empire. Spain's unwillingness arose from the fact that she still had colonial possessions in both North and South America. All west of the Mississippi had been given to her by France in compensation for her recent loss of Florida; Central and South America, minus Brazil, was still hers from the time of the sixteenth-century conquests. The Spanish ministers of 1778 thought that the British colonies, if triumphant, would be necessarily militant, and would go forth conquering and to conquer. They also thought the example of successful colonial rebellion would be contagious. Were they right? The whole later history of America has shown that they were. No truer forecast has ever been made. Spanish America has ever since been in unrest and rebellion, and all the profit thereof has fallen to the "most peaceful nation on earth." The United States has absorbed Louisiana, California and Russian America, and stretches from ocean to ocean. She helped Great Britain in securing independence for South American republics, and has lately "emancipated" Cuba, and acquired Porto Rico and the Philippines. The last news is that she is about to enforce her arbitration on the belligerents of South America. Chile and Peru have differences, and the U.S.A. wants to settle the quarrel. Now we all know how the kings of the French, when they were very feeble folk and ruled only as far as they could see from the walls of Paris, began to extend their power by offering to settle the feudal quarrels of their neighbours. We know how Scotland nearly fell under English power in the thirteenth century because her feudal nobles appealed to Edward I. to settle their succession question. "America for the Americans"! Yes, but beware, O ye South Americans, of your protector!

We still hear too much in text books, and consequently in examination papers, of the "unjust" and "illegal" taxation of the Stuarts, of their "oppression" and the "noble" resistance to "tyranny." In a later period, too, we hear too much of the "struggle for reform" and of the "repression of free speech" and the "gagging of minorities" during the Napoleonic wars. Our writers still seem to go too much to the brilliant fireworks of the irresponsible Parliamentary opposition in the seventeenth and eighteenth centuries, and too little to the necessarily more cautious, more sober, less apparently convincing, and often quite silent justification of the various government policies. "The arguments are on one side, and the votes on the other." No one seems to ask where the *reasons* were. Certain recent events may help to a clearer understanding of these old-world questions. They may help us to see how small a part of the national life these contests played, just as a fuller knowledge of Parisian life helps us to understand that even in the "Terror" ordinary folk lived their ordinary life, letting the political thunder roll over their heads.

The Duke of Devonshire has said that "the School Boards had repeatedly been warned that in respect of some of their schools and classes they were pursuing an illegal course," *i.e.*, they had been imposing illegal taxation and spending it on what some might regard as "luxuries." In a debate in May in the House of Commons, Sir E. Grey said that the strike which the miners were then threatening "would be the nearest approach to *civil war* in this country for many years." Mr. Gerald Balfour said, "such action on the part of the miners would be selfish and unpatriotic, and would amount to *veiled rebellion*." Mr. Fenwick said, "when it was proposed to levy an unjust tax upon a particular section of the community, the country must not be surprised if *strong measures* were taken in order to checkmate the manœuvres." Sir H. Fowler said, in another debate, "he supposed the Government would make this, as they did all other matters, a question of confidence. This tendency he deplored, for the Government ought not to lay claim on the one hand to the infallibility of the Vatican, and on the other to the autocracy of the Tsar. It was time the House of Commons asserted its right of criticism." Mr. Arthur Balfour "takes time from members unofficial, not for Government legislation, but for necessary financial measures." How newspapers now, and historians afterwards, can out of these materials make, according to their bias, two utterly different pictures of our various crises!

PHYSICAL TRAINING.

Whatever basis may exist for the outcry against "over-athleticism" which has been raised in some quarters, there can be no doubt as to the increasing interest which is being taken, and rightly taken, in physical training and development. Originating largely in the researches of those scientific observers whose investigations demonstrated the evils attendant on the educational methods, or want of method, then in vogue in Sweden, Denmark and Germany, the movement has rapidly spread throughout every civilised country; and the literature of the subject is already assuming bewildering proportions. Books and pamphlets on gymnastics, exercise and training are being placed before the public at prices which indicate the desire for instruction in a subject already become popular with the general reader. The sign is a hopeful one. None can question the physical evils which attend the strain and pressure of modern life, and we need not regret that a public wakening to consciousness of such facts craves for an antidote to the poison it is imbibing—and that, if possible, in the same spoon.

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Of the works now before us, that by Mr. Miles[1] may first claim our notice, not merely on the ground of its generous proportions, pleasant type, and its illustrations both pertinent and profuse, but because of the happy manner in which the scientific aspect of the subject has been cast into a popular and interesting form. It represents the investigations of the scientific translated through the mind and speech of an accredited and experienced athlete, none of whose writings is lacking in originality. It is much more than a translation in the ordinary sense. A wise discretion has been shown in omitting the technicalities of fact and diction peculiar to the German original, and a large amount of additional matter has been added by Mr. Miles himself. The illustrations are all useful, and none the less so because even those borrowed directly from anatomical works have been shorn of the explanatory references as to names of the several muscles, &c.; thus sufficiently illustrating the more popular form of the English text, without burdening the reader with a barren list of structural technicalities which could prove to him in no true sense informing.

The general style of the work is fluent, and often piquant; and a certain amount of repetitionary insistence on important points is not out of keeping with the general plan of the book—nor is it carried to the point of weariness. As might be expected, Mr. Miles rates games, properly played, at a high value both morally and physically; but he is not less clear as to the value of that steady—and, above all, of the intelligent—practice of those small details in exercise by which not only success in games, but physical health and grace, together with mental promptitude, moral self-reliance and self-respect and generosity, may be acquired and developed. As is well known, the author holds views of his own upon the question of diet. But he is a rare example of the enthusiast who is no bigot, and those least inclined to agree with some of his conclusions will admit the sincerity and frank broad-mindedness with which they are advanced.

The hints and directions given in connection with the practice of various games and exercises are to the point, and often valuable. Not merely the thing, but the reasons for—or against—it are clearly stated. The book has a good index. It is one to be appreciated by all interested in physical culture, and would be a useful work of reference in a school library.

Full directions for carrying out two courses of exercises in schools—the first "freehand," and the second with the aid of light apparatus (wands and dumb-bells)—are contained in the small and handy volumes[2] which come before us from America. The work of each course, we are told, is intended to occupy half the school year, so that the two kinds of exercise are practised in succession, a week being allotted to each lesson. It is advised that not less than fifteen minutes be allowed for the exercises each day, and that this time be divided into three or two equal periods, according to the ages of the pupils in the different classes; and further, that while new movements are taught in the morning, the whole weekly lesson from beginning to end should be gone through in the afternoon. The time devoted to the exercises is thus not too long upon any one occasion, and any danger from the considerable fatigue involved in physical exercise for children—a danger too often ignored or unrealised—is avoided. The exercises are practically variations and extensions of the Swedish postural movements with which most are familiar, carried out, in order, to the word of command; their nature and method are clearly indicated in the letterpress aided by the illustrations (reproduced from photographs) describing the several lessons and their parts. One point in favour of this system is the considerable amount of floor space which is necessary for carrying it out properly. The importance of free ventilation during the lesson is insisted on; but the teacher's attention is not directed to the still greater value of such exercise if it be carried out in the open air, while the windows are advised to be closed as soon as the lesson is over, to avoid risk of chill. In these respects we consider the directions to the teacher leave much to be desired. Indeed, these two books, while admirable in some respects, on school gymnastics, woefully belie their name. For, almost without exception, the photographs represent the children as performing the movements attired in their ordinary clothing, and often gorgeous with frills, lace collars and pinafores. The illustration on page 431 of "School Gymnastics with Light Apparatus" is a case in point; one feels in doubt whether it is intended to depict the restraining influence of ordinary clothing upon the expansion of the chest, or the straining effect of the exercise upon the buttons of the tightly fastened jacket. Far better physical results would be attained if jackets, braces and bodices were doffed before the exercise was begun, even though the duration of the lesson were thus curtailed by a few minutes; and the subsequent resumption of this clothing would secure after-protection against chill with less need for interference with proper ventilation of the room.

The exercises described in Mr. Lishman's book[1] are based on the Swedish system; they are carefully graduated in series from simple postural movements to the more complicated exercises with light dumb-bells and bar-bells. The general directions for each exercise, illustrated by reproductions from actual photographs, occupy one page, which is faced by the particular musical composition in accompaniment to which it is intended that the drill should be carried on. The airs selected are well suited to the purpose, and this feature of the book alone would serve to commend it to all those who do not spy therein an insidious plea for the universal extension of "piano grants." If this position be accepted and a capable pianist be available, there is no doubt that the accompanying music adds to the value of the drill in more ways than one. It is pleasant to note that the pupils are, throughout the illustrations, depicted in an attire suitable for exercise. This is a practical addition to a few useful pages of "Hints to Teachers." Mr. Lishman writes with the ripe experience of a practised teacher and trained observer whose heart is in his work; he remarks, "There is no real reason why a civilian should not be as 'soldierly' as a soldier. Why he is not is simply due to the fact that he was allowed to drift up in slovenly, careless habits in regard to his bodily form, with no clear idea of the correct style to be attained." Such a phrase as to "drift up" certainly throws into relief the beneficence of that actively formative care and direction which underlie the gospel of physical education.

[1] "The Training of the Body." By F. A. Schmidt, M.D., and Eustace H. Miles, M.A., Cantab. (Swan Sonnenschein.) 7s. 6d.
[2] "School Gymnastics. Freehand." By Jessie H. Bancroft.
"School Gymnastics, with Light Apparatus." By Jessie H. Bancroft. (D. Heath & Co., Boston, U.S.A.)

[1] "A Drill Book for Elementary Schools." Edited by John Lishman. (Longmans, Green.) 7s 6d.

THE FOUNDERS OF GREECE.[2]

SINCE the publication of Prof. Ridgeway's "Origin of Metallic Currency" a few years ago, his name has been a red rag to flaunt before the archaeological conservatives. In that book the cherished convictions of the symbolic school of interpretation were torn to shreds, and those who had believed an axe to be the sacred emblem of Zeus were asked to regard it as an obsolete unit of barter. Nevertheless, his views are steadily gaining ground, and we anticipate a more respectful hearing for this book on the part of opponents who have felt the weight of his arm. Yet the thesis here advanced is certain

[2] "The Early Age of Greece." By William Ridgeway, Disney Professor of Archaeology in the University of Cambridge. In 2 vols. Vol. I, 21s. (Camb. Univ. Press.)

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to be vehemently opposed. It is no less than an attempt to identify the builders of Mycenae and Tiryns with the Pelasgi, and to show that the culture of the Homeric poems is that of the Achaeans, who conquered the Pelasgi, and held Greece until they in turn were dispossessed by the Dorians. The Pelasgi are identified with a race of dark, small men, who are the earliest inhabitants of Europe of whom we have any certain knowledge: the Achaeans, with a tall, fair and blue-eyed race, whom we meet with in central Europe, whither they seem to have come from the north; the same race, in fact, as the Norsemen and the Celts. These theories are based on legend, archaeology, and linguistic. Not only are the material remains of the Mycenaean world ascribed to these Pelasgi, but the Homeric poems themselves and the invention of the hexameter; the hereditary bards of the old race are supposed to sing the exploits of their conquerors, just as the Irish bards did for theirs.

Within our space we cannot discuss fully the immense area of evidence, filling nearly 700 pages, which Prof. Ridgeway marshals to prove his case. But we may take as an example of his method the discussion of the shield. He finds that the Mycenaeans carried a shield of hide, shaped something like an hour-glass, with a thick waist, and very tall; while the Homeric heroes used a round shield with a central boss. Shields in every respect like the Homeric have been discovered in central Europe, and are characteristic of the civilisation called after Hallstatt, where the chief remains have been found. He shows that the Homeric shield was not derived from Phœnicia, or Egypt, Libya, Persia, or Assyria; hither then it must have come from central Europe, or central Europe must have borrowed it from Greece. But the pre-Homeric shield is proved to have been of a different shape by the Mycenaean remains, and by its survival, *e.g.*, in Arcadia: therefore it came from central Europe. Add to this the evidence from the helmet, greaves, and body-armour, from methods of burial, and from legend, and you have a number of independent streams of evidence all flowing in the same direction. Incidentally Mr. Ridgeway demolishes the attempts of Reichel, followed by Leaf and others like so many sheep, to show that the Homeric civilisation was that of the Mycenaean remains.

We would pay our tribute to the completeness of the argument, and in great degree to its clearness; although there is room for improvement in the arrangement of the facts, the author having a fondness for short paragraphs which do not correspond with the sections of his subject. We would add our emphatic approval of the importance attached to legend. Of late years, almost every discovery has helped to establish the essential truth of the Greek legends, and it is only strange that they have been so long discredited. We hope that ere long someone will investigate without bias the early legends of Rome, which still lie under the ban of historians. Although we never have laughed at the Pelasgians as a myth, we have felt some reluctance to own our belief in them; but henceforth no one need be ashamed of his faith. If this brilliant book does not prove everything it attempts, there yet remains a solid achievement for that remarkable race which any race might be proud of. To reassure any who may be jealous of the glory of Greece, we would say that the Pelasgians were no less Greek than Achaeans, Dorians, or Ionians.

The upper part of one of the Knossian figures, which is well preserved, is of the highest ethnographic interest, as presenting for the first time a careful naturalistic portrayal of a Mycenæan man . . . That this Cretan type represents that of the pre-Hellenic occupants of mainland Greece is highly probable. It still survives intact in the Illyric part of the peninsula.—A. J. Evans.

RECENT HISTORICAL NOVELS.

Our batch of historical novels this month is concerned entirely with comparatively recent history. The first two, dealing with the period of the Great War, freely introduce "historical" personages and incidents: the rest, coming nearer to our own times, are content with depicting social conditions at particular times and places. It is precisely in this last aspect—where limits of space make text-books exceptionally helpless—that the historical novel becomes most useful; and as its date of writing approaches the date of the period depicted, it rises to the dignity of a "source." In fact, Mr. Howells has recently been maintaining that the contemporary novel of manners—*e.g.*, Miss Burney's "Evelina" and Trollope's Barset Stories—is "the only true historical novel."

Of the eight books before us, the first two are expressly written as boys' books, and the rest would probably be considered worth reading by young folk—with the possible exception of No. (3), with is rather full of moral reflections similar to those which, to some minds, disfigure even "Robinson Crusoe." Nos. (5) and (6) both introduce the visit of the Prince of Wales to the United States in 1860. We should like to recommend (3), (7) and (9) especially to teachers on the look-out for holiday reading which shall not be "shoppy," and which shall yet give them an idea or two which may come in useful for "shop" purposes.

(1) O. V. Caine. "Face to Face with Napoleon." [367 pp.; 6 ill.; 2 plans.] (Nisbet.) 2s. 6d.—This story begins just as rumours of Napoleon's retreat from Moscow are reaching Western Germany, and it deals mainly with an English boy's adventures during the War of Liberation (1812-1814). The English boy (aged eighteen) shows plenty of grit; he saves Napoleon's life, rides over a hundred miles in one day to convey the letter which ended the Franco-Prussian alliance, rescues Luneburg from the French once or twice, does much to win the Battle of Nations for Germany, and becomes an intimate friend of Blücher and Scharnhorst. His adventures are told in a spirited way, and the characters, though conventional in type, are real and speak brightly—constrasting pleasantly with the wooden personages and dull dialogue of many boys' books, even by the most highly esteemed workers in that kind.

(2) O. V. Caine. "In the Year of Waterloo." [365 pp.; 8 ill.; 1 plan.] (Nisbet.) 2s. 6d.—Another capital boys' book, taking the heroes of "Face to Face with Napoleon" through the Hundred Days, and ending with Napoleon's death. The Duke sends them from Vienna on a confidential mission to Elba, and they arrive there just as Napoleon is escaping. Thenceforward they are in the thick of the fun, mostly dogging the Emperor's footsteps, till the battles of Ligny and Waterloo. Mr. Caine's two books strike one as likely to give the rising generation almost as much pleasure as we derived in our youth from Lever's Napoleon story—"Tom Burke of Ours."

(3) R. M. Thomas. "Trewern, a Tale of the Thirties." [246 pp.] (Unwin.) 6s.—The sub-title is suggestive of the Epoch of Reform; but politics play only a small part in this delightfully fresh and simple story of what we cannot but regard as actual experiences. The narrator is a small Welsh landowner who professes to be writing, some time about 1866, an account of his young days. Shooting and fishing appeal to him more than politics, and he is keenly interested in the social and ethnological conditions of South Wales two generations since. Over and above the charm of the story, there are many bits of folk-lore and shrewdly sympathetic comments on Welsh national character.

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(4) EMILY SPENDER. "A Soldier for a Day." [312 pp.] (F. V. White.) 6s.—This "story of the Italian War of Independence" begins with the Austro-Sardinian campaign of 1859, and ends with the royal occupation of Rome in 1870. The writer is as enthusiastic a partisan of "the Whites" as Mr. Henry Harland is of "the Blacks"; but the book is much less finished than the "Cardinal's Snuff Box." It is a somewhat jerky and unconvincing performance; but the author has caught much of the hopeful spirit of Italian patriotism a generation ago, and her description of Perugia—where the greater part of the events take place—supplies the reader with an additional motive, if any were needed, to visit that city.

(5) IRVING BACHELLER. "Eben Holden: a Tale of the North Country." [320 pp.] (Unwin.) 2s. 6d.—This book has had remarkably large sales in the States—well on to half a million, it is reported; but it must be confessed that the reason for this great success is not very apparent to mere Britishers. Still, the people are human enough; their happenings have the touch of nature; and there are many quaint stories and snatches of popular songs which remind one of Uncle Remus. The narrator, when quite a small boy, is taken out west from Vermont along the Paradise Road by Uncle Eb; later he comes into contact with Horace Greeley of the *New York Tribune*, and takes part in the battle of Bull Run. The keynote of the book is the hard life of the early Yankee pioneers in the West—

> Saving and scrimping from day to day,
> While its best it has squandered and flung away.

(6) WINSTON CHURCHILL. "The Crisis." [522 pp.; 8 ill.] (Macmillan.) 6s.—Mr. Churchill's present heroine, Virginia Carvel, is the great-granddaughter of the eponymous hero of his earlier book, "Richard Carvel"; and not a little of the development of the story turns on the actions of the previous one. But whereas "Richard Carvel" was an Anglo-American story—the scene of which shifted from Maryland to London during the earlier phases of the American Revolution—"The Crisis" is wholly American in scene and tone. The first half of the book deals with happenings at St. Louis during the sixties of the nineteenth century; and the rest takes us through certain aspects of the Civil War, including Grant's capture of Vicksburg, Sherman's march from the sea northwards, and Lincoln's entry into Richmond and subsequent assassination. Like "Richard Carvel," the book is somewhat lumbering and "scrawny" (to use one of the author's words) in structure, and suffers from a somewhat exaggerated and unconvincing hero-worship (Mr. Churchill constantly applies to Abraham Lincoln expressions usually associated with Jesus of Nazareth); but on the whole it is interesting merely as a story, while it is highly suggestive in its historical lessons. The author tells us that he is a native of St. Louis, and his descriptions of different currents of feeling and different phases of social life in that city just before the outbreak of the Civil War impress one with a sense of verisimilitude and fairness. The two old friends, Judge Whipple, the worshipper of Lincoln and the devoted adherent of the Union, and Colonel Carvel, the Southern gentleman who despises Lincoln, believes slavery a divine institution, and ultimately dies for the South, are drawn with equal sympathy and power. The hero, the heroine, and the villain are more conventional and less satisfactory. Taken as a whole, however, the book gives one a clear and trustworthy picture both of the social conditions and the chief historical figures in what is in modern American history emphatically "*the* Crisis."

(7) E. HOUGH. "The Girl at the Halfway House: a Story of the Plains." [308 pp.] (Heinemann.) 4s.—"Eben Holden" is mainly occupied with the westward migration "before the war." This book begins with a brief description of a typical fight in the war, and then plunges into a description of life "on the Plains" during the period of rapid expansion westwards which immediately followed the struggle. The book does not reach the standard or the length of another "after-the war" story which the same publisher sent us some months since—viz., Miss Glasgow's "Voice of the People"; but then the Plains are not so intrinsically interesting as "the Old Dominion." It is, however, a fair example of the "local" novel which is so common and so uncommonly well done in America. The four main divisions of the book aptly illustrate the progress of civilisation in the West—"The Day of War," "The Day of the Buffalo," "The Day of the Cattle," "The Day of the Plough;" and "The Girl at the Halfway House" lives through all these phases. This book is also the opening volume of an attractive-looking "monthly series of American fiction" which is called "the Dollar Library," and in this case the dollar means four shillings—not the five shillings which is the usual publisher's equivalent. Mr. Heinemann holds out some expectations of introducing a few more writers like Harold Frederic to the English public—an expectation which we hope rather than believe he can fulfil. Still it must be confessed that the author of this book, though he has not yet reached the level of "Illumination," has climbed considerably higher than "The Lawton Girl." Particularly remarkable are his vivid sketches of typical incidents in life on the Plains—*e.g.*, the First Ball, the Trial, the Arrest, and the Blizzard.

(8) EDMUND MITCHELL. "The Lone Star Rush." [368 pp.; 8 ill.] (Chatto & Windus.) 6s.—This novel does not deal, as the title suggests, with Texas half a century ago, but with the Westralian goldfields of to-day. It is the usual goldfield mixture, with no particular local colouring to distinguish it from its American analogues. The uncomfortable scarcity of water and an equally uncomfortable plenty of villany are the leading characteristics.

(9) SYDNEY C. GRIER. "The Warden of the Marches." [327 pp.; 6 ill.] (Blackwood.) 6s.—Mr. Grier's writings form a particularly happy illustration of the Aristotelian dictum that fiction is truer than history, because it is more general. His three Thracian books, "An Uncrowned King," "A Crowned Queen," and "Kings of the East," give one a capital generalised idea of the essence of Balkan politics, to say nothing of one character, Lord Cyril Mortimer, who clings to one's memory much more tenaciously than most personages in fiction. His stories of the Far East are no less out of the common—if we may judge by the only two known to us, namely, those which deal with the North-west Frontier of India. In "Peace with Honour" he gave us a thrilling account of a British mission into some "buffer-state" between British India and "Scythia." In the present volume he tells some of the later experiences of the hero and heroine of "Peace with Honour." It is a fine story of a region which lies somewhat outside the province of Mr. Kipling and Mrs. Steel; and the contrast between the British officer "on the spot," who knows the native mind and the conditions of the place, and the higher official sent down from Simla who wants to assimilate the Khemistan government to that in force along the rest of the frontier, is admirably drawn out. Mr. Burgrave, "the Kumpsioner Sahib," whose fine qualities are deftly intermingled with his red-tapiness, and the shade of the dead General "Sinjaj Kilin Bahadur," are merely the two best portraits in an attractive gallery. Though a novel of the present day, it is truly "historical," for it shows—in a form which would interest many to whom the names of Sandeman and Jacob are unknown—some of the essential conditions of "The White Man's Burden."

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BOOKS ON PSYCHOLOGY.

THE entitling of these *two volumes* of Prof. Titchener[1] as both Vol. I. is misleading, but no doubt it is intended to suggest that Vol. II. will take up Quantitative experiments. The work is a remarkable one. Indeed, it is hardly too much to say that it is likely to be era-making in its significance. For although Dr. Scripture and Prof. E. C. Sanford have written earlier books of acknowledged effectiveness of treatment, yet Prof. Titchener's volumes before us are more thoroughgoing and suggestive than any treatise in English; it is a book which has taken eight years in the making; it is the outcome of Prof. Titchener's directing insight and zeal, and embodies, as he himself states, "the work of a long roll of students." We venture to say that this book will be no less significant in the stimulus which it gives to the study of experimental psychology than it is comprehensive in its inclusion of the best of the experimental work already accessible. Prof. Titchener's main positions seem to us to be unassailable. (1) That experimental work in psychology is not done for any direct end of its own, but solely to render the student capable of observing introspectively. (2) That work in experimental psychology should not be a mere series of interesting experiments to be viewed as separate exercises without connection, but should be regarded as points of departure for systematic discussion. In other words, laboratory work is only useful in so far as it helps to the realisation of a more systematic introspection and a better organised psychology. The field of sensation is most comprehensively surveyed. Visual sensation, auditory sensation, cutaneous sensation, gustatory sensation, olfactory sensation, are dealt with in remarkable profusion of experimental investigation. Then follows the experimental psychology of the affective qualities, attention and action, perception, visual and auditory, tactual space perception, ideational types and the association of ideas. The book is an inclusive directory of the subject up to date. Besides, the full treatment and exposition of a vast number of illuminative experiments, the teacher's part contains examination questions, bibliography, together with selected references and readings in the various parts of the book, firms recommended for the supply of psychological instruments, list of materials, appliances, furniture, &c.

The subjects treated in Professor Jastrow's book[2] are: The Modern Occult, the Problems of Psychical Reseach, the Logic of Mental Telegraphy, the Psychology of Deception, the Psychology of Spiritualism, Hypnotism and its Antecedents, the Natural History of Analogy, the Mind's Eye, Mental Prepossession and Inertia, a study of Involuntary Movements, the Dreams of the Blind. Professor Jastrow examines each of these questions, not with a view of establishing or overthrowing any particular opinions on the matters discussed, but rather so as to understand the psychological bases which bring about particular interest in those matters, and which lead to strong convictions on questions, at any rate, off the high road of scientific development. In speaking of the data of Astrology or Phrenology, or Palmistry, Professor Jastrow quotes Mr. Lang's dictum as to ghosts, rappings and bogies, the "interest in these notions is in how they come to be believed, rather than in how much or how little they chance to be true." This is precisely the attitude taken by Professor Jastrow with regard to the questions stated above. It only remains to be said that Professor Jastrow has invested his treatment of this attitude with great interest. His analysis of the various forms of extra-scientific research is masterly, and is a most instructive and attractive study in the psychology of belief.

1 "Experimental Psychology: a Manual of Laboratory Practice." By Edward Bradford Titchener. Vol. I. "Qualitative Experiments." In two Parts. Part I., Student's Manual. 8s. 6d. net. Part II., Instructor's Manual. 10s. net. (Macmillan.)

2 "Fact and Fable in Psychology." By Joseph Jastrow, Professor of Psychology in the University of Wisconsin. (Macmillan.) 8s. 6d. net.

A SCHOOL HISTORY BY SIX OXFORD LECTURERS.[1]

THIS volume is the work of six Oxford lecturers, who have shared among them the seven "parts" into which it is divided. It contains ten maps, executed in a style which may be pleasing from its novelty, but which does not excel in clearness. The first, which will excite the intelligent schoolboy with its as yet unfamiliar names, is not referred to in the text. There are also six plans of battles, three from the seventeenth-century civil war and three of later times. These are helpful. Each "part" is furnished with a bibliography divided, on principles which we cannot understand, into "helps," "text-books" and "sources." We remark with surprise Walter Scott's "Tales of a Grandfather" and "Piers Plowman's Visions" (*sic*).

The story is told fairly well as a whole, but the book fails, in our judgment, as a book for *schools* because the authors do not seem to have taken enough pains to make it carefully correct. In days when it is increasingly important that our pupils should have as good a style as possible constantly presented to them, it is unfortunate that what will naturally be regarded by them as a standard work should contain so many instances of "got," "so," "and so," and so many misplaced "only." We have been several times puzzled with the order of events, which has been curiously inverted. Perhaps the most striking illustration of this occurs on p. 91, where we read, "The new King (Edward II.) buried *the Hammer of the Scots* with slight ceremony at Westminster, and soon turned back to the south" (*i.e.*, from Scotland). One would imagine that Westminster was "on the border." The explanation of Wiclif's views on the Eucharist (p. 116) requires reading two or three times before it is understood. The reference to Normandy (p. 132) seems to imply that we lost that province for the first time in the fifteenth century. Among other examples we note as strange that Saracens were still pouring over Spain in 1000 (p. 23), that Richard sold Cyprus to the Templars (p. 57), that Parliament asked Richard of Gloucester to take the crown in 1483 (p. 139), that England had ceased in Elizabeth's reign to be a nation of farmers and wool-growers (p. 178). We fail to find any mention of William I.'s Doomsday, and we cannot tell from p. 181 whether the Tudors prepared for the "peace" or the "conflict" of Stuart times. The paragraph on the Model Parliament (p. 86) also puzzles us. Are the only changes in the composition of Parliament "legislative"? When did the clergy sit in the House of Commons, to which they have not yet returned? The following paragraph from pp. 220-1 perhaps illustrates in the shortest space some of the reasons for our disappointment in this book. We quote it at length:—

"Charles II. dared not commit illegal acts as Charles I. had done, nor dared he rule without the advice of ministers whom (*sic*) he knew were answerable to Parliament for all they did. Parliament too had set up the new king, and Charles II. always felt that it could (as it said) send him on his travels again. He did not dare, therefore, to oppose it; although, as we shall see, he tried to get rid of it and rule without it. The Restoration was not really the giving up of all that had been done since 1640, but an attempt to make kingship and the new ideas that had grown up work together. These new ideas —of which the chief was the right of the people to be ruled as they wished—had first been brought forward by Eliot and Pym. They were now partly allowed, but only became fixed at the Revolution of 1688. Nor in religious affairs was the work of the Commonwealth undone. It is true that bishops and the Church were at once put back in their old

1 "A School History of England." viii. + 380 pp. (Clarendon Press, Oxford.) 3s. 6d.

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position; but men had learnt the first lessons of toleration—they had seen that persons of different religious views could live peaceably side by side. It is true also that the severe rule of the Puritans, which looked on pleasure as evil, gave place to the riotous joy of the Court under Charles II. But the spirit of Puritanism still lived. Men still felt that to live well was a hard fight with evil. Milton, the prophet of Puritanism, still lived and wrote till 1674."

On this paragraph we make the following comments. Others will suggest themselves. In any sense of the word "illegal," Charles II. committed as many illegalities as his father. The Cabal illustrates Charles II.'s choice of ministers as well as the "Chits." Charles II. can scarcely be said to have "tried" to get rid of Parliament. He dissolved two of them very successfully in 1679-81. Eliot and Pym would have been much astonished if they had been told they advocated the right of the *people* to be ruled as they wished. And the Whigs of 1688 were of much the same mind. The word "Church" is so much misused in this book that it would be a useful task for the authors to attempt to agree on a definition of it. What "bishops and the Church" means we are puzzled to imagine. The Clarendon Code, the specific work of the Restoration, is scarcely an example of the growth of toleration. Puritans did not "look on pleasure as evil." They objected to bear-baiting, to Sunday plays and to other abuses of pleasure. The penultimate sentence requires study. That Milton still lived after the Restoration seems to be irrelevant to the purpose of the paragraph.

CHARACTERISTIC LATIN EXTRACTS.[1]

THE word "Anthology" is properly used in the sense of the choice of the best things, and, seeing that this is not the principle of the present book, it is a pity Mr. Tyrrell did not hit upon another title. His object is to give characteristic extracts, and to include not only the best of the best writers, but specimens of all writers of importance, from the fragments of Saturnian verse to Boethius. The extracts, which fill 259 pages of small print, are certainly characteristic, and the book will be found a most useful aid to study by the aspiring undergraduate, or, indeed, the schoolmaster himself. The notes are generally good, particularly so on the dramatic pieces, and for less-known authors almost as full as would be thought necessary in a school edition. For old Latin we should wish them to be fuller. It is surprising, when we think of the fragmentary character of early Latin remains, how interesting many of them are. Now it is the description of a flirt (8, 5) or the New Woman (24, 2), now a good thing about war (28, 10), a famous proverbial saying (7, 4); epitaphs, like those on the Scipios, Naevius and Parevius; the oracle of Veii; traditional songs and chants. They bring home in a striking manner how rude the language was before the literary masters got hold of it. The book is very interesting, and may be used as Mr. Tyrrell suggests, as a companion to his lectures on "Latin Poetry." A few suggestions may be added. The sources of the old Latin fragments might have been indicated. The note on iv. 8 runs two comments into one, so that "topper" appears to be given as "the accepted reading for *utrius fuerunt*." In v. 2 *procus* and *precor* should be compared; the unwary will think *procat* is an old form of *poscit*. The rules for treating the Saturnian are faulty, we cannot but think. That Roman verse, which even with Plautus and under Greek influence followed closely the accent of spoken language, should have completely disregarded it before the Greek quantitative system was known is incredible. Like alliterative English verse, it doubtless disregarded quantity and the number of syllables, and it depended on stress-accent. Thus *cumĕ* which was impossible in prose speech, unless before an enclitic, must surely be wrong in verse, but *apŭd vos* is right; *quoiĭs formā virtutēs* (3, 1, 3) certainly wrong for *quoius fōrma virtūtes*. The accents even on Mr. Tyrrell's principle are erratic. Where is the first accent of *filios* (3, 2, 3)? *Venti* (21, 27) should be *vĕnti* or *venti* if alternative feet are marked; *Trebea* (21, 3) has no accents; *crĕatum* (3, 5, 3) ought to have none. In 2, 2 *strupri* is a misprint. Our criticisms, it will be seen, are due in the early part; for the rest we have only praise.

[1] "Anthology of Latin Poetry." By R. Y. Tyrrell, Litt.D. (Macmillan.) 6s.

A DISTORTED VIEW OF EDUCATION.[1]

IF Mr. Harold Gorst intends his book to be taken seriously—which we are inclined to doubt—he would have us believe that the best thing possible for the future of the British Empire would be to close all schools, put all schoolmasters under restraint, and set all boys and girls, of six or seven years old, to educate themselves. Education, as it has hitherto been understood, is, he gravely assures us, responsible for every existing evil, whether positive or negative. It is an unkind fate which makes such statements come from a son of the vice-president of the Committee of Council on Education.

A few *obiter dicta*, culled at random, will fully justify this estimate.

"The foundations of all existing education systems are absolutely false in principle; and . . . teaching itself . . . is the greatest obstacle to human progress that social evolution has ever had to encounter."

"The product of the public elementary school is useless."

"Stupid boys are generally rendered more stupid by teaching."

"It should be the first object of the schoolmaster—if such a being ought to have any existence at all—to," &c.

"The more the idea spreads that girls must be given the same educational equipment as boys, the more rapid will be the degeneration of women."

"All the genius in the world cannot survive the hopeless imbecility of educational methods, except by successfully dodging them through stupidity and idleness."

"If every school and college throughout the country were closed to-morrow, it would probably effect some negative good within an appreciable measure of time, and it would certainly abolish much positive harm that is being unceasingly produced by the present methods of instruction."

"It is only by dodging the schoolmaster and the coach that youthful talent stands a chance of being brought to maturity."

But why continue? The examples might be increased *ad nauseam*, and little good result. Mr. Gorst has become possessed of an idea—not a new one by any means, but still a fruitful one. After wading through a slough of invective, the courageous reader finds in a late chapter, intituled "Real Education," what our author desires in the way of education. When found the statement turns out to be a very familiar one. "Real education would consist in assisting every individual to develop the faculties with which Nature has endowed him, and to train to their highest capacity any special talents that might reveal themselves during the process"—a definition which has been expressed before in almost identical words.

[1] "The Curse of Education." By Harold E. Gorst. viii. + 144 pp (Grant Richards.) 2s. 6d.

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Of course all earnest teachers recognise fully the paramount importance of developing the individuality of their pupils, and probably recognised it before the author of "The Curse of Education" took the subject into consideration. There is a grave danger that official codes and departmental programmes may encourage a barren uniformity, and it is the business of every educator to do his part towards counteracting the tendency. But to argue from such possibilities that all State interference in education is bad, and that schoolmasters are all blundering incompetents, is possible only to the individualist whose individualism has distorted hopelessly his judgment.

RECENT SCHOOL BOOKS.

Modern Languages.

Erckmann-Chatrian, Waterloo. Edited by A. R. Ropes. xvi. + 318 pp. (Pitt Press.) 3*s.*—Most of the novels written by these authors are well known to teachers, and recognised as suitable for schoolboys' reading. They are rather long, however, and a teacher might well hesitate to take such a novel in its entirety with his class. For private reading, on the other hand, nothing could be better. The editor has had much experience in annotating French texts for use in schools, and has consequently done his work well. His renderings are good; he gives all necessary information about the historical events connected with the story, and he has not overloaded his notes with disquisitions on grammar.

Erckmann-Chatrian, Le Blocus. Edited by A. R. Ropes. xv. + 271 pp. (Pitt Press.) 3*s.*—What has been just said about "Waterloo" may be repeated in the case of this text. The events described are perhaps less interesting; but the idea conveyed of the sufferings of the inhabitants of the little town of Phalsbourg is very distinct. It is to be regretted, from the teacher's point of view, that the story is told by a Jew; anything calculated to accentuate religious animosity should be avoided in school.

J. Stahl, Un anniversaire à Londres, Les quatre cri-cris de la boulangère, and *Il faut penser à tout.* Edited by C. E. B. Hewitt. 80 pp. (Arnold.) 9*d.*—These three little stories will appeal only to very young pupils, on account of their sentimental tone. As the French is fluent and correct, they will be found quite suitable for elementary work. The notes are adequate; we observe that a number of sentences are given in connection with each page of the text for retranslation into French. There is also an appendix giving examples of various rules of syntax, and another containing a list of irregular verbs with their principal parts. The vocabulary is not quite full. There are not many mistakes in printing; we have noticed *remplace* for *remplacé* on p. 9, and the general retention of the hyphen after *très*, which is old-fashioned.

Les Français en voyage. By Jetta S. Wolff. iv. + 148 pp. (Arnold.) 1*s.* 6*d.*—The authoress of "Les Français en ménage" here gives us a number of brightly written scenes, in which we accompany the Tournelle family to Switzerland and Italy. There is the father, who is fond of discoursing on all kinds of subjects, his son Alfred, a lively young fellow, ever ready to chaff and joke, the mother and daughter, typical French ladies, and a young Englishman confided to the care of M. Tournelle. Miss Wolff has distinct dramatic power, a gift of humorous and kindly observation, and a mastery of French, which combine to make this a successful book. There are a number of notes which deal with grammar and with idiomatic expressions, from which much may be learnt. The book is carefully printed, but not quite free from slips, *e.g.*, *ses* for *ces* (p. 5, l. 5), *est* for *es* (p. 9, l. 19), *fait-là* (p. 19, l. 20), *cette* for *cet* (p. 19, l. 32), *n-est* (p. 22, l. 18), *pointes* for *points* (p. 38, l. 6), *on* for *ou* (p. 71, l. 18), *rêve* for *rêve* (p. 79, l. 8), *ou* for *où* (p. 106, l. 34). It is more disturbing to find *si vous changeriez* (p. 20, l. 24), and *les années qu'il a passées* (p. 72, l. 30). We congratulate the artist who has illustrated the book on his sense of humour rather than on his draughtsmanship.

A German Reader for Beginners. By H. C. O. Huss. xxv. + 208 pp. (Isbister.) 2*s.* 6*d.*—There are 85 pages of prose extracts and 20 pages of poetry, the pieces being well chosen and well printed. A good vocabulary and notes are also supplied by the compiler, who attaches particular importance to cognate words in English and German. While there is much to be said for drawing the attention of learners to the similarity of words in the two languages and to some of the simpler sound changes due to the second sound shifting and other causes, there is a danger in dwelling on such matters with beginners; they are led to think of the English word in connection with the German, which it must be our object to counteract rather than to encourage at the beginning; and the pronunciation is likely to suffer. After the first year, on the other hand, such comparisons may be gradually introduced, and the learners can be led to discover the sound laws for themselves. Mr. Huss has given some of these in an introduction, which is not altogether satisfactory, and suggests that he is not sufficiently trained in Teutonic philology.

A. Elz, Er ist nicht eifersüchtig. Edited by B. W. Wells. iii. + 57 pp. (Isbister.) 1*s.*—We have rarely come across a text less suitable for use in schools than this foolish farce. And yet we learn from the preface that it "has been a favourite in American schools for thirty years." It certainly deserves this distinction as little as the *Roi des Montagnes*, which has probably had an equally long and successful life in our own schools. The editor confesses that the "characters and situations are not natural, but they are not meant to be." If a teacher does not think this sufficient to condemn the book, he will find that this edition contains adequate notes and a good vocabulary.

Classics.

Livy. Book II. By R. S. Conway, Litt.D. xxiii. + 208 pp. (Cambridge University Press.) 2*s.* 6*d.*—This book is a really brilliant piece of editing, and is one of the best of the many excellent volumes of the "Pitt Press Series." While provision is made for the needs of beginners in Livy, there is ample store of good things for very much more advanced students. The notes, exegetic, historical, critical, and philological, are alike masterly and illuminating. On several points the reader has the advantage of the views, not only of the editor himself, but also of Professor Reid, whose knowledge of Latin usage is justly styled "encyclopaedic." An Appendix is devoted to the story of Coriolanus, and another to the "Variation of Sequence in Oratio Obliqua," on which Professor Conway, collecting all the examples in this book, formulates a theory, which he promises to work out more fully in the near future. We shall await this development with interest, but meanwhile, as set forth here, the explanation seems *prima facie* to promise a settlement of a hitherto apparently anomalous variation. This edition must be used in all classes where Livy is to be begun or continued.

The Rise of Hellas. By E. G. Wilkinson, M.A. viii. + 144 pp. (Black.) 2*s.* 6*d.*—We regret to learn that the compiler of this "Historical Greek Reader" died just before its completion. Starting from the Greek myths, the learner is carried

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on through the progress of the Hellenic states—chiefly Athens and Sparta,—to the final blows dealt to the Persian invasion at Plataea and Mycale. A short account of the matter of each chapter is prefixed to it, together with modern parallels to the circumstances treated. Classes will be likely to gain considerably in intelligent translation where the book is used.

Tales of the Roman Republic. Part II. By J. B. Allen, M.A. 112 pp. (Clarendon Press.) 1*s.* 6*d.*—This is a continuation of Part I., which appeared last year, and is of the same plan and standard of difficulty, or rather simplicity, for it is meant to be used by beginners in translation. But it is impossible to recommend the use of the book. Why, for instance, should beginners be started off with the false form *quum*, and in the later pages find that *cum* is the same word, under a different (and correct) form? Other faults from a teacher's point of view we noticed in reviewing Part I., and they are here repeated.

Edited Books.

Æschylos: Tragedies and Fragments. Translated by the late E. H. Plumtre, D.D., Dean of Wells. (Isbister.) In two volumes. 2*s.* 6*d.* net per volume.—These dainty and artistic volumes are good examples of an ideal pocket edition. They are bound in limp leather and printed on thin paper. In preparing this re-issue the publishers have followed the revised text of the late Dean's excellent translation, and have included the numerous annotations with which readers of translations by this author are familiar. We can unreservedly recommend the volumes.

The Books of the Bible. (Rivingtons' Edition.) (i) *Joshua.* By the Rev. F. W. Spurling. 112 pp. 1*s.* 6*d.* (ii) *Ezra and Nehemiah.* By the Rev. P. W. H. Kettlewell. 103 pp. 1*s.* 6*d.* —This little series of little volumes distinctly improves upon acquaintance, and the present two examples are of a highly satisfactory character. In both cases the editors have achieved the distinction of presenting "much in a little," and for junior and middle forms these little books should be found of great service. Mr. Spurling's "Joshua" is of the highest value from the point of view of Scripture geography, a point upon which young people are often delightfully vague. His geographical introduction is a very fine piece of work, and is so supplemented by the notes that there is no excuse for anyone using this work to remain ignorant of the peculiar circumstances which form the subject-matter of the book. The four appendices are equally important, and equally brief, and equally condensed, but it may perhaps be doubted whether any explanation of the nature of a miracle, however well meant, is likely to prove serviceable to the type of mind for which this volume primarily caters. Mr. Kettlewell's edition of "Ezra and Nehemiah" is perhaps more remarkable for its historical than for its geographical notes, and the sketches of Persian history and of Jewish communal life are really masterly. The note also on the value of these books is worth great attention, for with all their importance, and in spite of the fact that they are frequently studied in school, perhaps no two books in the Canon are less known and less appreciated by those who have outgrown their schooldays than those of Ezra and Nehemiah. Indeed, it is by no means an unnaccustomed procedure, as the present writer only too well knows, to see people of mature years, surprised by a chance reference to these two books, dip into the New Testament to find them. Mr. Kettlewell's edition is certainly well adapted to make these books interesting, and his historical work to this end is exceptionally good. The notes, too, are all that can be desired.

Supplement to King Henry V. By Stanley Wood. (Dinglewood Shakespeare Manuals.) 24 pp. 6*d.*—This supplement consists of twenty-five questions fully, one might say very fully, answered in the admirable manner to which this series of manuals has accustomed those who use it. Mr. Wood treats herein some of the less obvious points in the play, and rewards those who follow him carefully with much useful and attractively put matter.

Woodstock. School Edition of the Waverley Novels. 499 pp. (A. & C. Black.) 1*s.* 6*d.*—The plan of this volume is of the same slight texture as that of the previous volumes in this series. The introduction is a very trifling piece of editorial labour, though the notes are more careful than in some of the preceding cases. A world of trouble has evidently been spent upon the index, which is remarkably full. Not a noteworthy edition, though probably a serviceable one.

Scott's Old Mortality. [Continuous Readers.] 219 pp. (A. and C. Black.) 1*s.*—This volume maintains those general characteristics of this series of Readers which we have previously noticed. There is a well-written introduction, the text is pleasantly diversified with woodcuts, and the notes are excellent. Admirably adapted to serve its purpose.

English.

Black's Literature Series. Poems of (1) *R. and G. B. Browning*; (2) *Lord Byron*; (3) *Lord Tennyson*; (4) *Keats and Coleridge.* By C. Linklater Thomson. About 65 pp. each. (A. & C. Black.) 6*d.* each.—These four little booklets are most unassuming in every way (save as to the colour of their covers), but they are put forward by Miss Thomson with a seriousness of aim upon which we desire heartily to congratulate her. Work on a much more ambitious scale would be heartily welcome, if Miss Thomson could be persuaded to undertake it with precisely the same general aims, her particular aptitudes being so clearly defined; for in every case the little booklet before us succeeds in being a thoroughly useful and admirably selected compilation. Taste in this latter matter and tact in adaptation are qualities which betray something more than mere practical capacity for teaching, and it would be hard to praise these very unambitious efforts to supply young children with genuinely good poetry too highly. In a general introduction prefixed to each selection Miss Thomson explains that they are intended for children between the ages of eleven and sixteen years, which perhaps justifies their simplicity and brevity. It may, however, be feared that as selections their use will be mainly confined to the earlier period thus specified. "The tyranny of examinations and the temptations they offer to cram work," of which she feelingly speaks, are beginning to be felt long before the second limit is reached with average children, and especially in the case of boys. Miss Thomson eschews notes and explanations and etymologies also, for the reason that their use hitherto "has not resulted in any real appreciation of poetry by the student." Precisely; and to give children bare examples of construction and form is the only true way to awaken that dormant intelligence; but there still are two uncomfortable facts to take note of: the inevitable examination *will* come round, and also the proportion of children in whom it is possible to awake that same "appreciation of poetry" is very small. The healthy Philistine is unfortunately not a development—at least in this country—he is an indigenous product As the twig is bent the tree's inclined, and children who are Philistines born and bred can scarcely enter into the generation of the children of light through much educational tribulation on their part, or on anybody else's. The teaching exercises appended to each selection are extremely valuable, and presuppose a good deal of explanatory matter supplied by master or mistress. To put this matter so successfully as to enlighten understandings between the ages of eleven and six-

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teen, and as a result to enable such juveniles to "explain the reference to Chapman in the first sonnet" (to take one random example) in any adequate way would, however, one thinks, be a very miracle of teaching power. So it would to enable a child of such tender years to say "what are the chief characteristics of ballad poetry, and how far has Coleridge been successful in reproducing them." However, Miss Thomson assures us that these things are the outcome of practical experience in teaching this sort of thing; and we congratulate her on the result as heartily as we wish well to this little series of little books.

Palgrave's Golden Treasury of Songs and Lyrics. Book IV. By T. H. Fowler, M.A. 259 pp. (Macmillan.) 2*s.* 6*d.*—To edit any part of the well-beloved "Golden Treasury" other than well would be a sort of crime against the gentle and gracious and cultured personality who was primarily responsible for its compilation; consequently Mr. Fowler has risen to the occasion and produced a most notable edition of the concluding portion of an evergreen work. Indeed, except for the use of upper forms and somewhat advanced students, this book may be found to be almost too fine in its scholarship and its tone of critical culture. At least, among the many very fine volumes of a splendid series of editions, this Fourth Book of the "Golden Treasury" claims for itself first rank if not a place apart; and Mr. Fowler deserves the highest praise for the manner in which his work has been done. The modesty of spirit which dreads lest "he may unconsciously be guilty of drawing away the attention of his readers from the text to his notes," so uncommon in editors, is in Mr. Fowler's case become something almost like reverence for the text itself, and certainly devotion to the intention and to the memory of Professor Palgrave. In this edition Mr. Fowler preserves the original preface to the "Golden Treasury"; and at the head of his notes prints the compiler's summary of the fourth book. About one hundred pages of his own notes follow, and in writing these Mr. Fowler ranges at will over the broad field of literature from Sophocles and Plato onwards. They present a most remarkable compendium of scholarship and literature with history and philosophy thrown in; and if one writes enthusiastically about this volume, it is because a careful examination of it discloses so many excellencies that, in spite of the editor's modesty, its wide acceptance is the only possible way of realising its deserts.

Concise Etymological Dictionary of the English Language. By the Rev. Walter W. Skeat. New Edition. Post 8vo, xvi. +664 pp. (Clarendon Press.) 5*s.* 6*d.*—

> Were man to live co-eval with the sun,
> The patriarch-pupil would be learning still.

There is something humorous in the appearance of these lines on the title page of the new edition of Dr Skeat's well-known dictionary, for its arrangement is a striking illustration of the principle enunciated. The tantalising search in former editions for such a word as *resuscitate*, culminating in its discovery under the word *cite*, is now a thing of the past. The new dictionary (for it is practically new) is arranged alphabetically. Advantage has been taken of the advance in English lexicography since 1882 (when the first edition appeared) to incorporate the results of the most recent researches, and the book may now be considered thoroughly up to date. We have discovered one instance of what is surely a fault in any dictionary—on p. 579 we find *Tutty*, "a collyrium"; on looking for the etymology of the latter word, we found that it was not mentioned. But the work as a whole is excellent, and ought to be in every school library.

History of English Literature. By S. J. Mathew. 534 pp. (Macmillan.) 4*s.* 6*d.*—This volume is a little disappointing. Its five hundred odd pages are very closely packed with matter, and induce one at the first view to believe the author has done very solid and steady work, if not in the direction of acute literary criticism, yet in the attempt to present one more broad and effective outline of the development of his subject to the general public. To the very last there is no lack of evidence that the making of this one, among the many books of our generation, has been to Mr. Mathew both a toil and a delight; yet the impression is left when the last page is reached that the volume is singularly unedifying, and lacks any kind of originality. It is a compilation rather than a history, and it proceeds from start to finish upon such well-worn lines that, if nothing startling or stimulating be said by the way, the journey loses a little (at least) of its charm. It is undoubtedly difficult nowadays to write the history of English literature. Many able hands in the past have tried it, and done it well. The only real excuse for adding another history to the fairly large existing collection seems to be some absolute novelty of view, or fresh method of statement; otherwise a Professor of History, such as we understand Mr. Mathew is, or has been, had better try to write a history of anything else in the world except the literature of England. It is just the lack of novelty that is so painfully apparent in this volume. One cannot but wonder whether the author intended it to be used as a text-book; or whether it is the result of tying together a great number of studies in the literature of various periods; or whether it is actually the serious outcome of what he would have us believe are his genuine moods and moments of criticism. In any case, the result is incommensurate and inadequate to the pains the author must have taken to put together so much matter, or the profit that will accrue to a reader not gifted with unusual discrimination. The illustrations of the several authors and periods are the one sole outstanding merit of the book. Mr. Mathew does not treat his readers to hackneyed quotations or to those poems and selections which have not only grown venerable in such service, but already suffer from the contempt bred of familiarity; he gives them instead many tit-bits of an unaccustomed flavour. There is in this procedure an evidence of independent study and judgment which the jogtrot nature of much of the matter of the book does not otherwise show, and which Mr. Mathew's own personal criticisms hardly furnish. In dealing with a writer like Stevenson, for instance, he is quite crude and commonplace and unthoughtful, though by no means essentially wrong in his estimate. His notions of George Eliot and Charles Reade seem equally careless and offhand, and if occasionally his appreciations seem to strike a deeper vein of criticism they only result in being painfully wordy. The modern period of English, as dealt with by Mr. Mathew, is the most unsatisfactory portion of his work, which with so worthy a subject should either have been done much better or not have been done at all.

History.

Problems and Exercises in History. Book B. 1399-1603. By J. S. Lindsey. 80 pp. (Heffer & Sons, Cambridge.) 2*s.* net.—This book is best described by its own title-page. It is "a revision term course containing sixty typical questions (thirty 'Junior' and thirty 'Senior') arranged in the form of twelve one-hour test-papers, with full answers, hints and references; also hints on answering questions in history, notes and queries on teaching history, notable topics of the period, select list of books useful to the teacher and learner." We think it a book eminently serviceable to teachers who will know how to use it. But we should be sorry if it fell into the hands of those who would attempt to stretch their pupils on its Procrustean bed. We pity the children who should be expected even to write out the "five answers" herein given in the course of an hour, much

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less to produce such answers in that time. Such a book is for the practical teacher's library, not for use in the class room.

A History of Rome, for High Schools and Academies. By G. W. Botsford, Ph.D., Harvard. With maps and numerous illustrations. 396 pp. (New York: The Macmillan Co.) 6*s.* 6*d.*—This book is written in a clear and interesting style, and is, we think, well adapted for the middle forms of schools, even for a first history book if the study should be late begun. It does not neglect or sneer at legends, nor does it enter into minute constitutional detail; but the main facts of the history are here. It has further the very great advantage of carrying the story down to the time of Charlemagne, and for that reason alone would be preferable to the ordinary school histories, which ignore the empire as if there were no such thing. At the end of each chapter is a short list of other books which will be found useful by the teacher or student. The pictures and maps are good; but we wish orographical maps were always to be found in a history. Here are none of them. Dr. Botsford is no second-hand historian; he has studied the authorities and formed his own conclusions, which sometimes differ from those accepted. In particular, he corrects Mommsen's account in one important point of constitution. Only experience can show whether the book is adapted for class use; but its simplicity and grasp of principles make us believe that it is so.

Famous Englishmen. (Book I., Alfred to Elizabeth.) By John Finnemore. xi.+217 pp. (A. & C. Black.)—Mr. Finnemore has told, in simple language, the story of eight great fighters, Harold, Hereward, Edward III., the Black Prince, Henry V., Warwick, Drake and Raleigh; of nine non-fighters, Dunstan, Becket, Langton, Wycliffe, Chaucer, Caxton, Wolsey, More and Shakespeare; and of three who belong to both classes, Alfred, de Montfort, and Edward I., though even of the two last their fighting careers predominate. The first thought that occurs to us is, how much we owe to those who were not Englishmen, and who are, therefore, excluded, though the admission of de Montfort has inserted the thin end of the wedge of argument for their inclusion. How much would this book have gained as a medium for teaching English history if those wearisome mediæval wars had been omitted with the spurious glories of Crecy and Agincourt, and room been thus made, we will not say for S. Francis or Bruce, but for Augustine, Canute, William I., Henry II., Grosseteste, Henry VIII. and Cranmer, who surely did more to shape our modern England than such advocates of lost causes as Hereward, Warwick or More. Within its self-appointed limits the book is fairly well done. "Troth" is surely "promise" rather than "truth." Simon's contributions to constitutional history are, as usual, exaggerated at the expense of Edward I., and we did not think that any sovereign after Mary Tudor was called *Head* of the Church. But the youngsters for whom this reader is devised will have time to unlearn these things in after years, and we would end with a word of commendation, viz., for the illustrations, whether photographic or other, with which the book is adorned.

Before the Great Pillage, with other Miscellanies. By Augustus Jessopp. x. + 260 pp. (T. Fisher Unwin.) 7*s.* 6*d.*—We are afraid it cannot yet be regarded as an impertinence to recommend Dr. Jessopp's books to our readers. Yet the author of the "Coming of the Friars" (a volume of historical essays, which has more than reached its eighth edition) is one of the most delightful of guides to English history. All of that volume could well be read to our elder pupils, or even by them, with pleasure and profit. And now the Canon who calls himself a "shepherd of Arcady" has collected some further essays of his into another volume for our pleasure and edification. The book contains nine articles: "Parish Life in England before the Great Pillage" (*i.e.*, the disendowment of Edward VI's. reign) shews how the village church belonged to the village folk, and was in fact practically their own creation and daily delight. "The Parish Priest in England before the Reformation" speaks of the character and duties of the parish priests and of their endowments and how they lost them. "Robbing God" is a manly protest, based on history, against the use of this phrase to describe those who advocate disendowment. "The Cry of the Villages" is a pathetic and convincing appeal for something to be done for our rural population on the same principle as that of the technical institutes, &c., which flourish in the towns. "The Baptism of Clovis" is what our forefathers would have called an "*occasional* essay" *apropos* of the fifteenth centenary of that event lately celebrated in France. The remainder are described by Dr. Jessopp himself as "trifles which must apologise for themselves." Their subjects are tortoises, birds and moles, and may be regarded as dessert—and very good dessert too—to the feast which the Doctor has provided for us. We think we have discovered one or two misprints (at any rate, unless for "regard," p. 217, we read, "disregard," we fail to understand the sentence), and there are two sentences on which we might be inclined to inaugurate a controversy. Page 7 raises the question whether, spite of Prof. Freeman's powerful advocacy of the doctrine which he expressed epigrammatically by saying "we English are ourselves, and not anybody else," the Roman origin of some of our institutions is not getting to be regarded as orthodox. At least, Dr. Jessopp says that the "geographical unit of the Conqueror's survey, namely, the *Vil*, was of Roman origin." But this we must leave to the experts. On page 92, there is a passing parallel, *apropos* of our Nonconformist friends, which, though literally true, implies something which they would regard as a misrepresentation. But we who know and, we will venture to say, love the Canon in his writings, can easily forgive him his prejudices, which are, at any rate, outspoken and kindly.

The Close of the Middle Ages. By R. Lodge, M.A. xi. + 570 pp. (Rivingtons: "Periods of European History.") 6*s.* net.—We heartily welcome the appearance of this long-expected volume. The two hundred years here portrayed form a confessedly difficult period of European history, and, despite Prof. Lodge's modest disclaimer, we think he has accomplished his task most successfully. His twenty-two chapters are arranged more topically than chronologically, and the only defect of the book is the lack of a chronological table which would serve as a bird's-eye view, or as a key to the confusion which the period, though not the book, presents. Four chapters are given to German history, five to Italy, four to France, while others deal with the more or less outlying subjects of Switzerland, the Hanse towns and Scandinavia, the Hussite movement in Bohemia, Poland, Spain, the Eastern Empire, and the Renaissance. There are no fewer than nineteen genealogical tables to help us through the wilderness of Neapolitan and other dynastic struggles. There are four maps and, of course, an index and short bibliography. Prof. Lodge's remarks on French finance strike us as particularly fresh and enlightening. He represents the Emperor Charles IV. under new lights, regarding his services to the empire as more useful than his previous biographers have thought. But we specially recommend to our readers his treatment of the Franco-Burgundian struggle and its effects on English history. The teacher who reads and makes a note of this will find something to cheer him through that weary waste of civil strife which we call the Wars of the Roses. Indeed, though no chapter is specially devoted to English history, there is, on the other hand, no chapter which does not throw light on even those parts of our national story which forms the subject of our daily lessons. With this volume, the series of which it forms a part is so far

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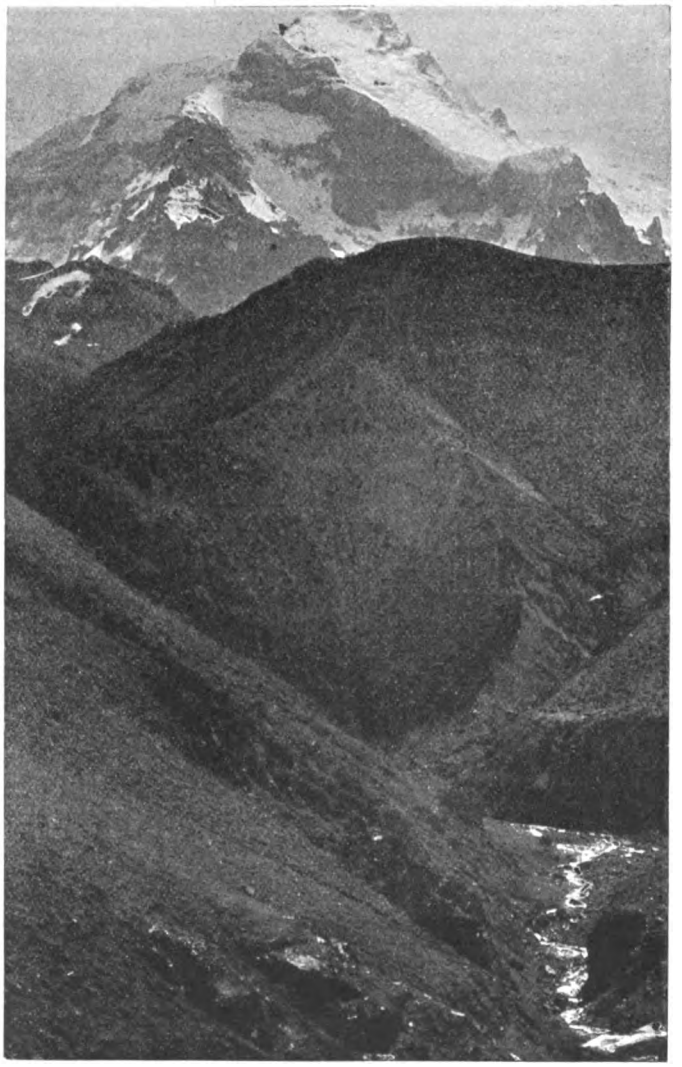
complete that we have now a continuous history of Europe from 476 to 1815. The only remaining volume will carry on the story to our own days. We are exceedingly thankful for the series, and as we have already said, to Prof. Lodge. There is no longer any excuse for English-speaking teachers to be wholly ignorant of the history of Europe. The obligation lies on them to purchase these volumes, and then read, mark, learn, and inwardly digest them, so that they can supplement their teaching with intelligible comment.



ACONCAGUA.
From A. H. Keane's "South America" (Edward Stanford).

Geography.

Stanford's Compendium of Geography and Travel. South America. (Being Vol. I. of Central and South America.) xxii. + 611 pp. 13 maps, 84 illustrations. By A. H. Keane, F.R.G.S. 15*s.*—The large additions made to our knowledge of the geography of "Latin" America during the last quarter of a century have necessitated more than twice as many pages being given to it in the new issue of this well-known series as in the original single volume. (It should be noted that the present volume excludes Guiana, which, with the West Indies and Central America, is dealt with in Vol. II.) Mr. Keane has a happy knack of securing the interest of the general reader without sacrificing anything of the accuracy necessary to the scientific treatment of his subject. But it is rather on purely professional grounds that we would draw attention to the merits of this book. The science of geography, in English schools, has yet to secure an adequate amount of recognition; and this will not be possible until the teachers themselves have been taught. Now, we venture to say that, with the help of the very clear maps, the illustrations, and the author's lucid explanations, any teacher can make himself sufficiently master of the geographic principles illustrated in the case of this continent to be able to dispel once and for all the listless attitude of his pupils during the geography "period." The book is written with a distinctively educational purpose. In the introductory chapters (74 pp.) dealing with South America as a whole, advantage is taken of the physical and climatic contrasts that exist between South and North America to emphasise the difference of their development as conditioned by geographic environment. Amongst such differences the sections on the aborigines and their relations with the whites are especially suggestive. Turning to the chapters dealing with the separate states, the causal idea is equally prominent and equally serviceable. For instance, the peculiar difficulties of the frontier questions in South America would at once impress themselves on a boy's mind if he were told that, a few years ago, the honour of including within its borders one of the highest, if not the highest, peaks in the Andes—Aconcagua—remained unsettled between the claims of Chili and Argentina. (We are able to reproduce the illustration of this mountain.) We have not space to enumerate more than a few of the important geographic principles that can be illustrated by the teacher who will take the trouble to read, or at least use for purposes of reference, this book. Some suggestive topics are: "Why is not Paraguay a part of Brazil?" "Why are the agricultural labourers leaving Chili in such large numbers?" "What is the old Pampean Sea?" "Where will a tree divert the course of a river?"

The New Basis of Geography. By J. W. Redway, F.R.G.S. xii. + 225 pp. (New York: the Macmillan Company.) 4*s.* 6*d.*—This book is intended as a manual for the guidance of the teacher with regard to the aspects in which he should regard geography. It is a sound, common-sense treatise, and rightly lays stress upon the conception of geography as the science of man's activities in relation to his environment. Professor Redway illustrates his points in a clear and convincing manner; as when, for instance, commenting upon the usual definition of a cape as "a point of land jutting into the sea," he says, "St. Roque can hardly be called a typical cape from a physiographic standpoint, but it is very much a cape from the view of the master mariner who sails along the South American coast." A most readable and suggestive book; treated along the lines laid down, the conception of geography as a science in England may result in such a consummation as (we are merely giving an instance) the ignoring of Derwentwater's loveliness and of Windermere's size, but the emphasising of Thirlmere's utility to Manchester.

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South America. 77 pp. 1*s.* *An Elementary Geography of England and Wales.* Illustrated. 202 pp. 1*s.* 4*d.* By L. W. Lyde, M.A. (Black.)—Mr. Lyde's books on geography have frequently been noticed in these columns, and the opportunity has always arisen of pointing out their many excellent characteristics. The volume on South America is drawn up on the same plan as the other text-books in the "School Geography" Series, and needs no further recommendation. The *Reader* is one of the best, if not the best, we have seen for young children, and is sure to be widely used in the lowest forms of our secondary schools. There is a misprint on the map on p. 38—*Shale* should be *Swale.*

Asia. (Macmillan's New Geography Readers.) Illustrated. 263 pp. 1*s.* 6*d.*—This is intended for more advanced pupils than Mr. Lyde's book, and the causal idea is more fully developed. On the whole, the author has succeeded in writing an interesting and instructive account of Asia, but the style is rather loose in places, and on p. 31 there is a confusion between *heat* and *temperature.*

Science and Technology.

Life by the Seashore: an Introduction to Natural History. By Marion Newbigin, D.Sc.(Lond.), with many illustrations by Florence Newbigin. (Swan Sonnenschein.) viii.+344 pp. 93 figs. 3*s.* 6*d.* net.—For many years we have felt the need of a convenient introduction to the natural history of the shore, and we welcome this volume most heartily. There are some fine old books, such as Gosse's "Marine Zoology," but the best of them are scarce or too large to be carried about. Moreover, they tended to be too learned, just as more recent attempts to deal with the fauna of the shore have tended to be not learned enough. But Miss Newbigin, after years of careful study, has achieved in this volume a distinct success. The work is solid and yet interesting, with a wide biological outlook, and yet condescending to most useful identification-tables. It is one of the most serviceable and sensible of the many introductions to natural history, and it will be a great boon not only to teachers and puzzled parents, but to serious students. Those who have already given some attention to the subject will appreciate the author's accuracy and scientific restraint; those who are just beginning are to be envied in having so good a guide to start with. Most of the illustrations are admirable. It will be a bad sign of the state of natural history in Britain if this book does not sell in thousands.

Experimental Chemistry. Lyman C. Newell, Ph.D. xv. +397 pp. (Isbister & Co.) 5*s.*—The plan of this book is described by the author in his preface as a combination of the inductive and deductive methods. Experiments are given for performance by the pupil, and then syllabuses of class work follow. The latter are likely to prove of considerable use to the teacher, but it may be urged that, since the range of study covered by them is so wide, with the ordinary proportion of time allotted to practical work on the part of the student, he will get far ahead of his lectures. This will usually mean that the teacher omits a great deal. Together with details of experimental work and schemes for the teacher's lectures are given some "theoretical" work of the kind somewhat like that in the older-fashioned school-books. Atoms and molecules are mentioned on page 53, while the origin of the terms is not explained till we reach page 138, chap. ix. In this chapter an account is given of valency, molecular weights, and a very brief account of ionisation. It is difficult to believe that a student can make much out of the statement of Avogadro's law, and the grounds for belief in the law are very scantily described. The book is on a modern plan so far as quantitative work is concerned, and for that reason may be consulted by teachers with much advantage; but with the other part of the book we must confess to a disagreement. A short course of testing for the various common metals is given, and a useful short bibliography, together with various tables, form an appendix.

Object Lessons for Rural Schools. By Vincent T. Murché. Book I. xix.+231 pp. Book II. xxi.+252 pp. (Macmillan.) 10*s.* 6*d.* each.—Mr. Murché knows exactly what teachers in elementary schools require in the way of notes for object lessons, and these two volumes, dealing with many of the subjects mentioned in the "Revised Instructions to Inspectors" as suitable for country schools, will be sure to prove of service. Teachers who are familiar with natural objects and phenomena do not need books of this kind to tell them what to say to their pupils, but there are many who have to teach things they know not themselves, and to these the volumes will be a storehouse of information—concisely expressed, and with a few exceptions sufficiently accurate for rudimentary instruction.

Curly Head and Dirty Puddle. The Crooked Oak-tree and The Life of a Dragon Fly. By Elisabeth Field and Emily Carter. In paper covers 3*d.* each. In cloth covers 6*d.* each. (Chapman & Hall.) These little volumes, which run to sixty-four pages each, are intended either for school lesson-books or to be added to the school library. They are suitable only for quite young children. Some interesting facts in natural science are told in the form of a story. The authors have succeeded in being interesting enough, though we are inclined to think that the children of to-day are not imposed upon by making plants, animals, and inanimate objects talk. In books of this kind it is of great importance not to give wrong impressions, and some of the statements to be found here may do so; for instance, it is misleading to speak of root hairs as "little mouths." The abundance of coloured pictures will make the books favourites with most youngsters.

Outlines of Physiography: an introduction to the Study of the Earth. By A. J. Herbertson, Ph.D. viii.+312 pp. (Arnold.) 4*s.* 6*d.* This attractive book reminds the reviewer of similar publications produced in America. The illustrations are numerous and good. There is no crowding and the chapters are short—that on the "Composition of the Atmosphere" only runs to one page, and that on "Oceanic Circulation" to two. We are disposed to think that Dr. Herbertson has striven too much after brevity, with the result that in some cases the reader will find it difficult to grasp his meaning—the paragraphs on Foucault's pendulum, for instance, would be much simplified by amplification. Some chapters have been introduced purely for examination purposes, and have little, if any, connection with the main subject. Chapter xxvi., on the composition of rocks, is an instance of this; the ordinary reader will not understand it, and even as a summary for more advanced students it is very incomplete. Dr. Herbertson is at his best when dealing with what used to be called "physical geography;" the astronomical and geological parts are not treated with the same ease and confidence. But the book may be recommended as an interesting introduction to ordinary natural phenomena.

Mathematics.

Non-Euclidean Geometry. By H. P. Manning, Ph.D. iv.+96 pp. (Ginn & Co.) 3*s.* 6*d.*—In spite of its small compass and modest appearance, this is an extremely interesting and valuable work. So far as we can judge, Mr. Manning has succeeded in the very difficult task of presenting the elements of elliptic and hyperbolic geometry in a form which, without being logically unsound, is suited for the apprehension of the ordinary

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mathematical student. The subject is developed as far as the elements of analytical geometry in the two systems considered, and the book concludes with a brief but sufficient historical note (in which, however, we miss the name of Arthur Buchheim). There is no longer any excuse for a teacher or student of geometry remaining ignorant of the fact that Euclid's postulate about parallels is not a necessary assumption, and that there are two other hypotheses equally legitimate.

Famous Geometrical Theorems and Problems. By W. W. Rupert, C.E. Parts I., II. 1-58 pp. (D. C. Heath & Co.) 6*d.* each.—Chapter I. deals with the theorems presumably known to Thales; chapter II. with the theorem of Pythagoras; and chapter III. with the value of π. Mr. Rupert has consulted good authorities, and gives an account of his subject which is both attractive and trustworthy. The two letters from a circle-squarer to De Morgan (pp. 49-51) are extremely amusing. Messrs. Heath & Co. announce a series of mathematical monographs, of which these three chapters form the first two numbers. The idea is excellent, and the execution, so far, quite satisfactory.

The Tutorial Algebra. Part I. Elementary Course. By R. Deakin, M.A. viii. + 444 pp. (W. B. Clive.) 3*s.* 6*d.*—This is neither better nor worse than other text-books of its kind: it will teach the student to do questions of the ordinary types, and give him abundant (too abundant) practice; but on matters of theory it is vague and inaccurate, although the author has evidently tried to appreciate the laws of algebra. As a sample of his failure, and his faults of composition, take this: "Suppose $+2\times-3$ or $-2\times+3$. Evidently the product will not be the same in either of these cases as in $+2\times+3$. Therefore we conclude that $+2\times-3=-6$ and $-2\times+3=-6$." "Again suppose -2×-3. This is different from the last two cases, and we conclude that $-2\times-3=+6$. From these results we can infer the rule of signs." Simply to state the rule of signs would be far better than to preface it by sham inferences of this sort.

Mental Arithmetic for Schools and Training Colleges. By F. L. Grant, M.A., and A. M. Hill, M.A. viii. + 106 pp. (Longmans.) 1*s.* 6*d.*—The authors are experienced teachers, and show by their preface that they appreciate the real use of mental arithmetic. But they have had to consider the needs of candidates for the Teachers' Certificate Examination, and have thus been constrained to spoil a good book by the insertion of useless and artificial "tips." The style of the Teachers' Certificate Examination sadly wants amending. Here are some samples of questions recently set:—"Decimal of 1 pole equal to 2 yds. 2 ft. 3 in." "True discount on 770 guineas due 15 months hence at 4 % per annum." "The price of ·375 of a ton at ·375 of a shilling per lb." To do such questions with speed and accuracy requires a large amount of drill; and the very students who learn to do them would go hopelessly wrong in forming, say, a rough estimate of $3\cdot1416\div(\cdot07)^2$. The authors very properly call attention to the importance of mentally checking calculations so as to avoid gross errors: to be able to do this is far more useful than to acquire the power of working out mentally the exact product of 8467 and 297, as the unfortunate candidates were asked to do in 1894.

Miscellaneous.

The Movable Horse for Artists, Teachers and Students sent us by Messrs. Baillière, Tindall and Cox (price 1*s.* 6*d.*) is, if we remember rightly, very much like one which appeared five or six years ago. It is of cardboard and the moveable joints admit of any posture desired, and should in the hands of a capable teacher prove decidedly useful. The trouble is that it *can* be put into attitudes which are quite grotesque.

Playtime Poems. By Ellen Collett. 41 pp. The authoress takes pains to thank the proprietors of *The Ladies' Field* for permission to reprint some most extraordinarily childish verse; so childish, indeed, crude in form and thin in matter, as to make one wonder however it came to be printed at all. It does not pretend to be poetry, except on the title-page; and as verse even it won't do.

Schoolboys' Special Immorality. By Maurice C. Hime, M.A., LL.D. xiii. + 115 pp. (Churchill.) 1*s.* net.—This is the third edition of a valuable little booklet to which we have already (May, 1899) called attention. The present edition has been enlarged by some sixty-seven pages. We would earnestly commend Dr. Hime's temperate and experienced counsel to all those who have charge of young people.

Annotated Scotch Code, 1901. Edited by John Kerr, M.A., LL.D. xxviii. + 290 pp. (Nelson.) 1*s.* net.—We cordially recommend this skilfully prepared edition of the "Code" regulating the work in Scottish schools to all who are responsible for the administration of the public schools across the border. It is the work of the late Chief Inspector of schools and training colleges for Scotland, and it is almost unnecessary to add that it would be impossible to find a higher authority than Dr. Kerr.

Practical Book-keeping. Part II. Advanced. 226 pp. By Oldham & Holland.—The examples given of various accounts are valuable. Among these are "Contractors' accounts," "Limited Liability Companies' accounts," "Charitable Institutions' accounts," and others requiring specially-ruled books. The book would be very useful in the hands of a teacher, but it is not altogether so lucid as it might be, especially in the early chapters.

The Preceptors' Book-keeping. By T. C. Jackson. 173 pp. (Clive.)—This book is intended to meet the requirements of students of book-keeping in evening schools, but the author has attempted to put too much information into the space allotted to him, with the result that many points which with fuller treatment might be made clear are left in obscurity, unless the teacher is at hand to explain. At the opening of the book he finds fault with the "orthodox" plan of writing treatises on book-keeping, forgetting that any plan is justified which makes the subject interesting and makes difficulties clear. The art of writing on any science consists in leading the uninitiated from the less to the more difficult by easy steps, but in this book the unfortunate student is plunged at once into "the ledger." There is a great deal of useful information in this work, and the examples worked together with the examination papers are valuable.

The Prayer Book Explained. Part I. By the Rev. Percival Jackson, M.A. 187 pp. (Pitt Press.) 2*s.* 6*d.*—This valuable manual is marked on every page by the thorough-going scholarship and the completeness which characterises all the publications of the Cambridge University Press. As an explanation of the matter of the English Liturgy nothing so good has been published for a long time, and if the Second Part, which ought to be awaited eagerly, only comes up to this first division, perhaps the most useful of all text-books hitherto published will be in the hands of teachers. In praising the book thus highly, it is not necessary to lose sight of the fact that Mr. Jackson writes from the High Church standpoint, and that many of his positions will not commend themselves unreser-

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vedly to any but those who are inclined to think (or not to think) according to sacerdotal direction. He is hostile to modern thought, for he tells his readers that "the critical spirit as we now use criticism is not the spirit of worship," and when anybody travels along that road it it very easy to predict the end of his journey. But in spite of the underlying assumptions of the book, it is a work splendidly done, and a little discrimination in those who use it will extract much that is useful from the accompanying and perhaps, occasionally, ridiculous assertions of a very painstaking author.

An Introduction to the Industrial and Social History of England. By Edward F. Cheyney. x.+317 pp. (The Macmillan Company, New York.) 6*s.* net.—This book is by Prof. Cheyney, of the Pennsylvania University, and is intended for college and high-school classes in the U.S.A. It dwells for the most part on the social and political aspects of our economic history, beginning with the middle of the thirteenth century and bringing the story quite up to date. After thirty pages of introductory matter, the chapters have respectively for their subjects, rural life and then town life in the middle ages, mediaeval trade and commerce, the Black Death and the Peasants' Rebellion, the breaking up of the mediaeval system, the Expansion of England, the period of the Industrial Revolution, the extension firstly of government control and secondly of voluntary associations in the nineteenth century. Each chapter is introduced by a sketch of National Events—(these sections are the only parts of the book in which we note any weakness)—and is closed with a bibliography for the period. Herein we miss a mention of the volumes of the Selden Society, some of which are reprints of sources for the history of manorial courts, of "Piers Plowman," and of Smiles' "Lives of the Engineers," all of which, in their various ways, seem to us to be useful to students of economic history. We have read the book with much pleasure: it is pleasantly and smoothly written, and while all is good, we would specially commend the last two chapters. The arguments for and against the various policies pursued are clearly and forcibly, while quite fairly stated. A study of this work, quite apart from its obvious purposes, is a good training in "impartial politics." We heartily recommend the work to all our readers.

Handbook to S. Mark. By the Rev. F. L. H. Millard. 254 pp. (Rivingtons.) 2*s.* 6*d.*—Several previous volumes in this series have already been favourably noticed in these columns, and this last issue is neither better nor worse than those which have gone before. As a volume for teachers, and especially teachers in elementary schools, or in secondary schools where the time for Scripture teaching is limited, and other subjects demand pressing preparation, this book will be found not merely useful, but almost indispensable. In saying this, it is by no means intended to hint that teachers who are addicted to methods of cramming will find in it a ready and serviceable means of saving themselves much trouble. On the contrary, while Mr. Millard provides ample material to carry any teacher along, he is always suggestive rather than exhaustive, and those who will may amplify the provision they will find in this volume very considerably. As in previous instances, the notes and the blackboard sketches are peculiarly deserving of attention. An appendix of geographical allusions is valuable, though why it should have been termed a glossary it is not quite easy to determine.

Schiller, Das Lied von der Glocke. Edited by W. A. Chamberlin. v. + 43 pp. (Isbister). 1*s.*—A convenient edition of this magnificent poem, which many teachers will like to put in the hands of their best pupils. The notes are adequate; it is a pity that a diagram was not added to illustrate the casting of the bell; it might have been substituted with advantage for the unsatisfactory frontispiece, a poor woodcut of Schiller, in which he is idealised to excess. The vocabulary appears to be complete.

Drawing Models for Elementary Lessons. With instructions by J. Van Dijck. Vol. I. Straight lines. (W. J. Sinkins.) 1*s.* 6*d.*—An interesting little book on the lines of MM. Ravoux and Jacquot's work. The illustrations in the first two parts are more familiar than inspiring, and are, many of them, no easier to draw than the far more attractive examples which follow. We rather doubt how far the angular little figures and animals at the end of the book could be successfully reproduced by young students who have at best but a slight knowledge of drawing, but they would certainly serve to arouse the interest of a class of children and to dissipate the weariness of the hottest summer morning.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Aims and Methods of Science Teaching.

I AM sorry that Dr. Buxton has intervened in the case of Prof. Armstrong *v.* The Cardiff Intermediate School—he spoils the fun! His remarks are all right, especially his quotations from "James' Talks to Teachers." Teachers in secondary schools are pretty well agreed as to the relations of psychology to the study of education; we thrashed all these matters out at the Joint Training Committee, whose Report has been approved by all the Teachers' Associations connected with secondary schools.

The salient point in my letter was a demand that Prof. Armstrong should submit *his own work to his own methods.* He scorns any kind of teaching that does not begin and end with research. "Very good"; I reply, "produce the results of your research in Nature Study and in Psychology, on which you write so confidently." Dr. Buxton protests that is unfair, and that "every man has a right to express his opinion upon either subject." Quite so: every man *except* Prof. Armstrong, who has burnt his boats, and, to change the metaphor, must not ask to eat his cake *and* have it also! Your readers will see that, if an adult professor can be allowed to form opinions and extend his knowledge in one field of science by the aid of researches in another field, the same may be allowed for children. And thus, without labouring the argument, the great "research" doctrine, as the one gospel of science teaching, falls.

Hence I do not think that Prof. Armstrong will accept Dr. Buxton's line of defence. I trust that he is quietly revising those researches into Nature Study and Psychology for which I asked him, and that in his own good time we shall have them. Meanwhile, this little skirmish with Dr. Buxton will help to amuse your readers in this trying weather.

Perhaps I ought to emphasise the particular circumstance out of which this delightful controversy arose. Prof. Armstrong did not confine himself to a *general* attack (such as he delivers with such eloquence) on bad teachers, but he picked out one school, named it, ridiculed its plan of study. Here is a definite, limited ground for controversy: when Dr. Buxton seeks to widen the battlefield and tells us that many other schools do shockingly bad work (actually taking "a policeman" for

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a natural object!!), I too am shocked. As Dr. Buxton expressly inquires, I may state that I *have* been aware of these parodies of science teaching, and that I welcomed Prof. Armstrong's help in denouncing the same, when we were associated at the first winter meeting of the College of Preceptors in 1898. But all this has nothing to do with the issue raised in The School World, arising out of two communications from Prof. Armstrong: (1) his denunciation of our scheme of science teaching (The School World, January, 1901); (2) his repetition of this, extending to an attack on its psychologic basis (in ditto, May, 1901).

J. J. Findlay.

Cardiff, July 17th, 1901.

History for Matriculants of London University.

Your July note about the possible abolition of Science at the Matriculation Examination of London University encourages me to call your attention to another illustration of the haphazard way in which that examination is conducted. In the paper set on English History at the recent examination, the following jewels of English occur:—

Q. 1. "*Show the importance of the reign of* (1) *Offa*, (2) *Egbert*, (3) *Henry I on subsequent history.*"

Q. 9. "*What and how were English colonies in North America and the Indies established before* 1700?"

How does "Importance . . . . on" strike you as a model of English for the guidance of the matriculant? And do you not think that the clear implication that the three kings named in Question 1 had only one reign amongst them is likely to encourage loose notions in chronology?

You will allow, at first glance, that the wording of Question 9 leaves something to be desired and ought never to have been passed in proof. But the defects come home more fully when one tries to answer the question, does "Indies" include both East and West Indies? If it includes the former, does it include the factories, &c. (which some books teach one to distinguish from "colonies"), established by companies of English merchants in many parts of Asia during the seventeenth century? Does "established before 1700" limit the colonies to those which were in existence in 1700, or does it include all "English colonies" "established before 1700," whether permanent or not? If it means the latter (as *prima facie* it seems to do), a full answer would differentiate amongst all the different colonies established in Virginia before the successful one of 1607, and also the many Puritan colonies established in New England which before 1700 had been amalgamated into the three or four whose names are likely to be known to the average matriculant. And finally, does the expression "English colonies . . . . established . . . . in North America" merely mean those which were "established" *as* "English colonies," or does it also include those which, whatever they were when established, became "English" "before 1700?" I would like to see either of the distinguished gentlemen whose names head the paper write from memory an answer deserving of full marks containing all that the question, as it stands, implies in the half-hour which is the average time allowed for each question. The late Mr. Quick tells us that he sometimes tried to answer his own examination papers under examination conditions so as to be sure of their fairness: might I commend his example to these two examiners? They are both reported to be very busy men; but if they cannot afford half-an-hour to set an intelligible paper, why do they accept the responsibilities of a London examinership?

Question 2 is another delightful one. Thus it runs: "*Draw a map marking the great Roman roads, the big mediæval trading towns, and the seats of the bishopric in England, in the time of Langland and Chaucer.*" That looks fairly straightforward; indeed, the general intention is obvious. Yet the mode of expression leaves much to be desired. The examiners want a map marking three distinct and dissimilar sets of data, but they do not specify the region of which they want a map. They require "a map," not three maps; but "a map marking the great Roman roads" would, I presume, include most of Europe and parts of Asia and Africa; and it seems hardly reasonable to expect such a map from young students in connection with purely "English History." If, on the other hand, they mean Roman roads . . . . "in England," they seem to be either using the term "England" incorrectly (which one cannot conceive Prof. York Powell doing, at any rate), or they are, somewhat subtly, limiting the scope of their inquiry to those Roman roads in South Britain which remained in existence for nearly a thousand years after South Britain had become known as England, and were in use "in the time of Langland and Chaucer." The Roman roads in themselves furnish a pretty stiff question; for the text-books are far from being agreed on their names and directions. But the favourite old question in this new form is really an "intolerable strain" on matriculants. It is even more difficult than marking "the seats of the bishoprics in England" at the time; and that is a thing which one of the examiners, Prof. York Powell, has failed to do correctly in the map of Plantagenet England in his admirable text-book. And I wonder whether "England in the time of Langland and Chaucer" includes or does not include Wales and Man. This point might involve a difference of three or four marks.

In conclusion, I venture to hope that the Oxford dons who are so very good as to come and examine us will give the benefit of the doubt to any of us who, not having had the advantage of their tuition, have not had our intelligence sufficiently developed to enable us to grasp their meaning.

Graham Stowe.

Newtown.

The Army Entrance Examinations.

The Civil Service Commissioners have not improved the Army Entrance Examinations by their alterations at the examination which began on June 25th. In the arithmetic paper the examiners set twenty-five very easy questions to be answered in the first hour and a-half, and six very long problems in the second hour and a-half. This is reverting to the old type of paper that used to be set for the second division clerkships; it was abandoned because it was found to foster mere mechanical accuracy and did not lead to the acquisition of any mathematical principles, at any rate among the vast majority of the candidates.

The French paper shows no improvement on that of last December which was criticised in your January issue. The piece for translation into French is taken from "The Rivals," and seems chosen because it contains as many idioms and difficult phrases as possible in a short piece. I fail to understand why the Commissioners insist on the examiners setting pieces of dialogue for translation into French and German. It does not tend to the sound study of these languages. The miscellaneous questions are still as favourable to cram as ever, *e.g.*:—

"What do you know of (*a*) *Marie Antoinette*, (*b*) *Mirabeau* or (*c*) *Necker?*"

"What is the historical event alluded to by this date:—*le 14 juillet?* Who were the persons represented here by the name

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of:—(1) *Monsieur le comte de Provence*; (2) *Duc d'Orléans*; (3) *Comte d'Artois?*"

"*Apropos* of *Madame de Buffon*, give a short account of the life of Buffon, and mention the titles of his principal works."

These are all the questions on French history and literature. Is it a wonder that few teachers give any time at all to this part of the syllabus?

The geometry and algebra papers show a marked tendency to the practical and graphical methods that were prophesied last spring. The pure mathematician is being supplanted by the applied mechanic. It is doubtful whether the examiners pick out the best material by thus changing the type of paper suddenly without warning. The best scholars will come out best, however much they are discouraged; but the average boys will come out all together, and their success or failure may depend on such a subject as freehand drawing.

DE V. PAYEN-PAYNE.

Defects of Secondary Education.

SECONDARY education is the education a boy receives who attends a grammar school where the pupils leave at or about the age of seventeen. It is the education received by many professional men before they go to a university, and by the better class of business people and tradesmen. In these circumstances, it is most important that the education given at grammar schools should be the best possible for equipping the recipients for their after business life. Many parents, however, grumble because, while spending a fair sum of money on their sons' education, the time at school is not utilised to the best advantage by the teacher. They urge that too much time is given to learning Latin, which is of no practical advantage in business. Now all educationists agree in saying that Latin forms a capital training. It strengthens the memory, puts a keener edge on the intellect, and brings forth a boy's power of perseverance in the face of difficulties. All this may be, and is, granted. But on the other hand, look at the time given to teaching this subject—one hour a day generally, as well as some homework devoted to it. Also, from a wage-earning point of view, the whole time is practically wasted. What good is Latin to the business boy when he has left school? Does it enable him to get ahead of his foreign rivals and competitors? Is it any good in the routine of the office? Ask any business man whether his knowledge of the Latin language put any money in his pocket? Is Latin any good to the engineer? Does it enable him to send in better designs, or get out better estimates? Is it any good to the manufacturing chemist? It is a little useful to the medical man, certainly, but then, all cannot be medical men. Thus the one hour a day given to Latin is to all intents and purposes wasted, and this time we cannot afford to waste.

In a manner I sympathise with the teachers who must teach it. They are bounded by examination requirements. The London Matriculation examination requires each candidate to pass in Latin. There is no option given to the candidate. Now most school governors regard this examination as a test of the efficiency of their school. Hence, forsooth, Latin must be taught. But surely governors are open to reason in the matter. However, I think the teachers themselves are a little to blame. They are too prone to go on in the same hum-drum style. Innovations mean extra work, extra time out of school hours and no extra pay. The pay is bad enough, goodness knows, except in a few exceptionally favoured schools. However, the crux of the question is—Could the time that is now devoted to Latin be better utilised? I think so. If Latin be wiped out of the school curriculum, more time could be given to French. Three lessons a week are usually given to this subject. Why not give a little more time to it, and devote the extra time either to conversation or to learning French business forms? Again, a little more German might be taught. Usually a boy leaves school with his knowledge of German practically *nil*. German is very useful to business men, and to the chemist. Why should not a boy learn his German properly at school, instead of picking it up in a slip-shod manner at some evening institute? Another defect in most grammar schools is, that drawing is either neglected altogether or fills in a half-hour or so. Now, in my opinion, drawing is as important a subject as anything, and requires three or four hours a week to teach it properly. Drawing should include not only freehand, but plane and solid geometry. Design with flat colour-washing should not be omitted. Most teachers know little of these subjects; moreover, most school governors cannot afford to pay for a specialist, consequently the drawing lesson is a farce. The boy amuses himself with the copy placed before him, and tries to draw it, while the teacher is content with an occasional word of advice. As for putting an element on the blackboard, and showing how from the element the design is built up, the average teacher in a grammar school is incapable of doing it.

I would refer to one more defect, and that is in the teachers themselves. Grammar-school teachers—as a body—have not been trained in the art of teaching. Some, indeed, do not wish to learn how to teach. Their wishes tend towards other professions which it is their intention to adopt—these are merely "birds of passage," and are little good to the teaching profession, lowering its status and keeping down the salaries.

HENRY H. HIGGS.

King Edward's Grammar School,
Aston, Birmingham.

The Colloquial Teaching of French.

IN his interesting reply to the letter from myself which you were kind enough to publish in your May number, Monsieur Barlet proves very clearly that he is in no way inclined to "ignore the beginnings" of Colloquial Teaching. I regret that I should have drawn an erroneous inference from the abridgment given by you of his address at the College of Preceptors.

I am in hearty sympathy with Monsieur Barlet in his earnest endeavour to demonstrate the high educational value that may be imparted to the study of French by an enlightened teacher using to the full the exceptional opportunities which Colloquial Teaching affords. I may not be able quite to adopt his exact point of view or completely to accept his general outline of the course; but I am delighted to read his spirited advocacy of the claims of French to a high and dignified place in the school curriculum.

We are frequently told that the colloquial methods are suitable only for young children and those whose education is to end, perhaps, at the age of 14, upon their entrance into a merchant's office. And much of the teaching that passes as colloquial serves, it may be, to justify that view. But in reality the misconception is ludicrous. By colloquial methods we not only teach French, we teach *through* French. Unfortunately the term "Colloquial Teaching" emphasises the method, and does not define the matter, of instruction. In the near future, teachers of modern languages, in accord now as to the methods, must seek to agree as to the substance and scope and precise educational aim of the teaching.

A. STALLWORTHY.

Royal Grammar School,
Newcastle-on-Tyne.

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Books on School Hygiene.

WOULD you kindly give the names of the standard works on School Hygiene; any foreign ones too?

July 13th. SANITAS.

[Dr. C. E. SHELLY has been good enough to send us the following list of books which may serve our correspondent's purpose. He points out, however, that it is difficult to make a selection without knowing whether the general subject or some special subject is in view.—EDS., SCHOOL WORLD.]

The literature of School Hygiene is very extensive, and a full list of the authorities dealing with it would be of embarrassing length. The following are among the chief of those treating the subject as a whole:—

"A Manual of School Hygiene" by Hope and Brown; "School Hygiene" by Shaw; "School Hygiene" by Newsholme; "School Hygiene" by Farquharson; "Health at School" by Clement Dukes; "Physical Nature of the Child" by Rowe; "Handbuch der Schulhygiene" by Burgerstein und Netolitzky; "Handbuch der Schulhygiene" by Bagnisky; "Over Pressure in Schools" by Hertel.

Good bibliographies are given in the works by Shaw and Rowe, noted above; and Burnham's "Bibliography of School Hygiene" (*Trans. Illinois Society for Child-study*, vol. i., p. 53) gives a lengthy list of titles. Reference may also be made to papers read at the Conference on School Hygiene (International Health Exhibition Publications 1884); to Section IV. ("Infancy, Childhood and School-life") of the *Transactions of the International Congress on Hygiene and Demography*, 1891; and to the "Code of Rules for the Prevention of Infectious and Contagious Diseases in Schools," and other publications of the Medical Officers of Schools' Association (Churchill).

The Tenure Question.

FOR a considerable time I have been endeavouring to find out what is the system of tenure which at present prevails at the Charity Commission and at the Board of Education, but up to the present without success.

What I want to know is—

(1) Whether the senior officials are liable to be dismissed summarily without appeal and without compensation when they may be in the right and somebody else in the wrong?

(2) Whether before taking office they have to sign a declaration that they will acquiesce in their own dismissal, should such be resolved upon?

(3) Whether the junior officials are liable to automatic removal on the death, resignation or dismissal of their superiors similar to what has taken place at Grantham Grammar School and elsewhere?

Writing in the hope you will publish this letter, I will ask your readers to bring this letter under the notice of the officials at those Government offices, and will ask them, if such a system of tenure does prevail, to join in the movement which has already been begun for improving the present system of tenure in schools under schemes of the Charity Commission.

THOMAS ALLEN.

July 18th, 1901.

PRIZE COMPETITION.

No. 15.—Short Stories of School Life

THE result of this competition forces us to the conclusion that schoolmasters and schoolmistresses who know good stories are reluctant to tell them. None of the stories received are of a very high standard of idea or style. They are short essays, correctly composed in most cases, but lacking the essential qualities of good stories. To begin with, the incidents described are commonplace, and are not raised above this dead level by the descriptive powers of the writers. Many people who are not artists can put paint upon canvas and words upon paper, but it requires literary art to give life and character to common scenes and occurrences. Without wishing to discourage those who submitted stories, we must confess to a feeling of disappointment at the result of the competition. We thought that perchance we should discover among our professionals a promising writer of real school-stories, but such writers are, evidently, not so easily found.

Some of the subjects of the stories sent in have been so often used that it is almost impossible to make them interesting by slight variations. Here are a few examples, for instance:—(1) An old schoolmaster is superseded by a younger man and is found dead in a bank of snow, in which he lies down and dreams about his class. (2) Wilful girls are tamed by loving words and gentle deeds of their schoolmistresses. This forms the ground-work of several stories, though the offences and means of forgiveness vary slightly. (3) A tiresome boy is blamed for copying answers and is drowned the next day. It is then found that the real culprit is another boy. (4) A new boy who gives himself airs is frightened into a fit by schoolboy ghosts, but he gets over his fright and becomes a changed character. (5) A high-school mistress falls a-dreaming while giving object-lessons on a sunny afternoon and is dismissed. Outside the school she meets "a fine young fellow in knickerbockers with eyes that told their own tale." The usual ending—"Julian, I will be your wife, she said, softly."

But we have no wish to enlarge upon these points. This kind of sentiment may do for children or school magazines, but more matured minds look for less obvious designs and conclusions. We have, therefore, decided not to publish any of the stories, and as none are clearly superior to the others, it would be unfair to award the two prizes originally proposed. But to avoid the suspicion of shirking responsibility, we have awarded to each of the competitors an equal share of the prize in the form of a book of the value of 3s. 6d., and at the same time we have returned the manuscripts to their respective writers.

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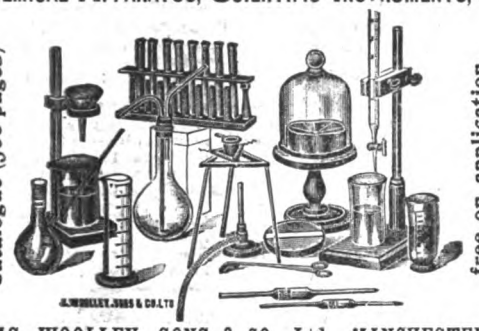

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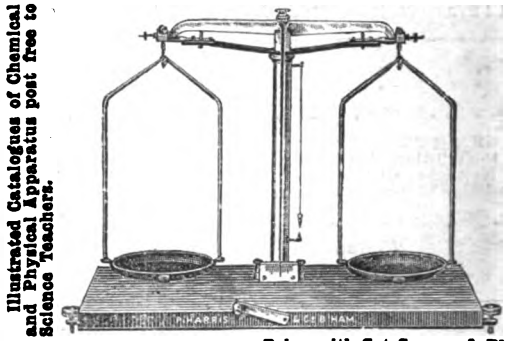

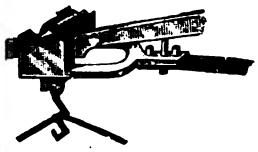

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THE TRAINING OF THE MEMORY.

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MEMORY is of very different kinds and develops at very different ages. Children, whose minds are not over occupied, can learn with amazing exactness a large number of isolated facts, and it is a pity that the opportunity thus afforded in early childhood for acquiring knowledge which afterwards may be found difficult or repulsive is not more frequently made use of. A child may become an accomplished herald, but it is not easy to see why, with the same labour, he should not have become an accomplished botanist.

A topical memory offers the strangest manifestations. A contemporary of my own at college could repeat any line of Horace or Virgil if the reference were given to him, and similarly, if any line were read out, he could give the reference. He knew exactly how many times each undergraduate of his year had attended chapel, and also how many times each pudding had been served up at the hall table. I once purchased a "Universal Almanack" which was brought round by a hawker, but my friend told me that it was quite unnecessary, as it was perfectly easy to remember the day of the week on which anything had happened. We tested him throughout the centuries, and found that he never made a mistake. At the same time, this extraordinary gift of memory was not of any special value to him. He gained a fair place among the Wranglers and was a first-class classic, but he did not succeed at the Bar to which he devoted his energies.

A memory for literature, as such, is somewhat different from this. It may be supposed that Lord Macaulay possessed both kinds of memory. He certainly could repeat the whole of the Cambridge class-lists, the course of the Apostolical succession down to Howley, and large masses of prose and verse which he had only once read. A friend of mine, chosen to represent the Borough of Calne with him in 1832, travelled down with him to Wiltshire in a post-chaise. The conversation turned on Napier's "History of the Peninsular War," which had just appeared, and Macaulay quoted large extracts from it. My friend assumed that he had seen the book, but he stated that he had only read some of the reviews.

Another kind of memory is what may be called memory for intrigue, that is, a very accurate memory of a number of minute circumstances which have happened with regard to a particular event. This memory is eminently necessary for the barrister, and is sometimes found developed to a portentous extent in lawyers' clerks. It is hard to suppose that this particular kind of memory is not capable of being improved by exercise.

But the question before us is not the existence of memory, but whether memory can be trained. There is, or used to be in public schools, a great deal of learning by heart; indeed, at Eton, where I was educated, all the poetry we construed, and some prose, was committed to memory. When I entered the school as a small boy, I had a fairly good memory; when I left, I could remember nothing, and was allowed by the master to depart if I had said a single line without being prompted. It seems, therefore, the method adopted in my case was the ruin instead of the creation of memory. We had to learn and say by heart one hundred lines of Lucretius. We sat awaiting our turn on the cold benches of the upper school in an early winter morning. To learn one hundred lines would be impossible and would be useless, because each boy, as he went up in turn, was expected to deliver himself of only four or five lines. At the same time, the effort was spread over the whole field, and we presented ourselves before the headmaster with an equal modicum of ignorance. One witty contemporary of mine, now well known in the educational and political world, used boldly to invent Lucretius and Homer, not having looked at his lesson. He stood below, pouring forth volumes of speech with a volubility which has not even now deserted him, while the master above, bewildered and amazed, caught at some snatches of familiar words as an evidence that he was really saying what he had learnt. The difficulty lay in the effort of his companions to keep their countenances, and not to betray his fraud by their laughter. Surely nothing contributed to destroy the healthy memory so much as the ill-directed effort to learn that which could only be learnt imperfectly, if at all.

When I was a master at Eton, I tried a different

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plan, but it was so opposed to school traditions that I could only practise it surreptitiously and occasionally, and I was always severely reprimanded when found out. I assumed that no learning by heart was of any use which was not thorough and accurate, and that it was impossible for a master, with the time at his disposal, to hear a form say thoroughly and accurately the amount given them to do. I therefore set twenty lines of Horace, which I expected every boy in the form to know perfectly. I called out at random as many to repeat the whole twenty lines as I could hear in the time, while the rest wrote them out from memory. No boy knew that he would not have to say them by heart, and therefore no boy could make preparations for fraud. I also allowed all those who wished to learn more than the twenty lines to get credit by writing them out. This proved a great success. Everything that was learnt was learnt accurately, and at the end of the half the division had acquired a respectable knowledge of Latin poetry. But, as I said, the experiment was crushed by authority, and I had to give it up under pain of dismissal.

One of the most remarkable examples of memory is to be found in Italian preachers, who deliver a sermon, which they have previously written, with verbal exactness and with the utmost accuracy of gesture and intonation, and yet will have learnt it in a very short space of time. I have often conversed with Italian priests on the exercise of this faculty, and they have told me that any astonishment at their ease of acquiring the sermon can only be surpassed by the reflection how completely they had forgotten it. "I preach," my friend said, "something like one hundred sermons a year, all written out, all committed to memory, but I cannot now tell you what one of them was about." This carrying memory, which may be required in several professions, and may be found useful for examination purposes, is obviously not of a very high kind, and it would scarcely be worth while to make an effort to train it. But I have no reason to suppose that my efforts to improve repetition at Eton would result in training the carrying memory alone; it would, I think, endow the learner with a large reservoir of literature which he would find of use in life.

Let me illustrate this by a story. An idle boy at Eton had to write out a number of hexameters as a punishment. He persuaded another boy who was less occupied to do the punishment for him. The master, on receiving the lines, suspected the deceit, and charged the boy with not having written them himself. The boy offered to repeat a number of them by heart to support the statement that he had written much of the punishment from memory. As a fact he had not written a line of it, but his friend, who was the real author, had been educated at the same private school, where the custom was to commit to memory a large amount of Virgil, which thus became a treasure for life. The writer told the culprit that he had inserted a number of these well-known extracts, and the culprit was able to clear himself by repeating them by heart. If the carrying memory alone had been called into play, the lines would have been forgotten.

We may, therefore, lay down, as one precept for training the memory, that whatever is learnt should be learnt accurately, and that all vague and nebulous impressions should be avoided. If this habit of learning is regularly exercised, it is almost impossible that it should not be gradually improved. It must be a difficult thing for a pianist to remember all the sonatas of Beethoven, but the training of this kind of memory forms a regular part of the musical education.

Another means of assisting the memory is that of a *memoria technica*, by which short and catchy phrases are substituted for longer and more bewildering statements. I have no doubt that this method can be employed with great advantage. Dr. Kennedy used jingle to a large extent in his Latin Grammar. Who does not know the famous lines from Paley's "Ghost":—

> First had one leg, then had two;
> Paley does not think it true.

When I was young the favourite *memoria technica* was Gray's, and I suppose that some people committed the whole of it to memory. I only learnt one phrase, "bel-pun-esi-das-bok," which was supposed to be the date of the three Punic wars. E stood for two, because it was the second vowel; S for six; and I for three, because it was the third vowel. D stood for two, because it was the first letter of "Duo"; A for one, because it was the first vowel; B stood for one, because it was the first consonant; O for four, because it was the fourth vowel; and K for eight, because it was the characteristic letter of *okto*, spelt on this occasion only with a K. This taught me that the dates of the three Punic wars were 263, 216, and 148 B.C. But as I now know these dates to be wrong, and that they would not gain me any marks in an examination, I am glad that my researches into Gray's "Chronology" did not proceed farther. I suppose that systems of *memoria technica* form part of all memory training of the present day, but it is clearly necessary that the information they impart should be accurate.

After all, the great engine for stimulating the memory is association of ideas, and the fact that one mental concept is certain, so soon as it is formed, to call another into existence. Some twenty-five years ago, Dr. Pick was a great Professor of Memory, and he gave lessons to myself and my Eton pupils. He certainly succeeded in enabling us to repeat long strings of words between which there was no obvious connection, and it seemed as if we had acquired the power of learning lengthy catalogues by heart. As soon as one word was repeated the next arose to the tongue spontaneously, and there seemed to be no end to the process. An association had been formed between these disjointed members which it was impossible to obliterate.

I have omitted one powerful source of memory, namely, interest. I have frequently argued with a

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pupil who would never learn his Latin or Greek grammar, that he had no difficulty in remembering every important cricket score for the last two years, or in learning his part for the house theatricals, the reason being that he took great interest in the one and no interest in the other. To excite interest is one of the chief objects of a teacher, and the teacher who has been most successful in exciting interest will also secure that his lessons are best remembered.

To recapitulate. In schools, memory will almost always be trained by learning by heart. To secure a good result, it is necessary that all learning should be accurate, and that every boy in a form should be made to learn the whole lesson set to the form. Imperfect learning, on the chance of not being called upon for repetition, is destructive even to the best memory.

Memoria technica may be found useful if it is skilfully constructed, and care is taken that the information given is accurate. There is no doubt that this method was used successfully both by the Greeks and Romans. But artificial helps to memory must depend mainly, if not entirely, on the association of ideas, and care must be taken that the system used is not so elaborate as to give more trouble than it is worth. It is no use to spend much time in making the mind remember a number of difficult things unless the exercise has strengthened the mind for the easier acquisition of smaller memories at another time.

Lastly, the chief root of memory is interest. All men remember that in which they are interested. The richest exporter of farm and garden produce from Italy to Germany, who died a few years ago, could neither read nor write, and kept the whole of his elaborate accounts in his head. He failed once or twice, but recovered himself, and died worth millions. Probably to arouse interest and to develop whatever special faculty of memory nature may have endowed us with is more calculated to strengthen the mind than learning by heart, the acquisition of *memoria technica*, or the invocation of strange and abnormal associations of ideas.

Verbal Memory.—There is a great difference between good and bad methods of cultivating the verbal memory. Among those who are not familiar with the science of education nothing seems a more obvious method of teaching than to tell the pupil to learn something out of a book and then come up to "say his lesson." Now of course memory is a faculty which needs to be cultivated, but there is a great deal of difference between remembering the substance of what is taught and remembering one particular form of words in which that substance is expressed. What we want most is that the truth, or the argument, or the fact which we value shall be understood, so that the pupil shall be led to think about it and to make it his own, and be helped to express it in his own words. Learning by heart a formula of words may easily become a substitute for thinking and not a help to it.—Sir Joshua Fitch in "Educational Aims and Methods." (Cambridge University Press.)

USEFUL AND USELESS SCHOLARSHIPS.

EDUCATION was never more talked about than now. It was never easier for English boys and girls to gain admission to every grade of school. Elementary instruction can be had free of charge, and the number of scholarships to schools where teaching of a higher order is given has become so numerous that in many centres some of them go a-begging. In introducing his second Education Bill a few weeks ago, Sir John Gorst said that of the 900 to 1,000 boys and girls in higher-grade board schools who would be affected by the Cockerton judgment, a great part could easily be provided for in secondary schools with scholarships, "of which there are abundance to be had." Indeed, a speech on education in which no reference is made to that fanciful ladder, which stretches from the gutter to the university, is so rare that no paper hesitates to describe it as "remarkable for its originality."

If progress and noise went together, we who are interested in education would have reason to congratulate ourselves. Many thoughtful onlookers, however, have recently raised notes of warning. In the speech to which reference has been made, Sir John Gorst, answering the supporters of board schools, said, "the education which you are spreading among the people is cheap, shoddy education." An able and acute educationist, with a large experience of our great public schools, wrote in a recent number of *The Pilot* that the methods of procedure of the headmasters of these great schools show "a lamentable ignorance of the true tests of sound training." From another quarter come complaints of a different kind. Headmasters contend that, though business men cry out for a certain kind of education which they call "commercial," those boys who have received it at their hands, after considerable trouble in rearranging the school curriculum, are not able to obtain suitable posts in business houses any more easily. Briefly, there is no unanimity as to the object of education, and, until this is clearly understood, our work runs a great danger of being fruitless endeavour.

Periodical stock-takings are the rule in all successful business houses, and something analogous is desirable where the ideas governing intellectual pursuits are concerned. At the risk of repeating the self-evident, it seems worth while to reconsider the reasons which have led the majority among us to think it necessary to educate children by sending them to school. Disregarding the unfortunate few who can live without working, it may be baldly stated that the first thing a man has to do is to earn his living. Food, raiment, and lodging are necessities for every son and daughter of Adam. With nothing to eat, no clothes to make him independent of the weather, and some place in which to sleep, the highest culture attainable would be no consolation to the best of men. Fundamentally, then, the education given to a youngster ought to be, in the first place, that which

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will put him in the way of earning honestly what is necessary for healthy life. Unless the education we give our children will help them to do this—it is bad. A hungry man cannot appreciate a poem, and it is useless to expect a person who wants sleep to listen to Wagner's music.

Such is the absolute minimum, though there are many things to be added if we wish to train useful, intelligent citizens. But here is the essential foundation. If any other is built upon it is, without doubt, a case of building upon the sands. Proceeding no farther for the present, it will be well to consider the scholarship question in view of this simple necessity of providing every man with the elements of living.

Speaking broadly, there are two classes of scholarships. The first provides opportunities to the child of the elementary school to pass on to the secondary school. The second class makes it possible for the boys of impecunious middle-class parents to obtain higher education at institutions of university rank. From the present point of view the scholarships to the great public schools may be disregarded, because they are nearly all secured by the sons of wealthy parents who can very well do without them.

It is best to consider the case of the bright boy at an elementary school, the son of artisan parents, before thinking of the youngster who competes for a scholarship to a university college. There is a great deal of silly sentimentality talked about "potential Faradays" and unrecognised poets and painters who are annually lost to the nation because they cannot secure the more advanced instruction they need. It is impossible to arrange our scholastic systems solely for the benefit of exceptional geniuses. And if, in our desire to avoid the loss of some embryonic intellectual giant, we sacrifice a large number of boys of rather more than average ability who are capable of becoming excellent skilled workmen in one or other of our many constructive arts, but who, if they are transferred to the ordinary secondary school, eventually degenerate into ill-paid clerks, we are from the national point of view acting in a most improvident manner. Yet in the great majority of cases something very like this actually happens. What is the net result to a boy of the working classes of two or three years spent at an ordinary grammar-school after he has passed through the "Standards"? Leaving on one side the unpleasant experiences during the process of transplantation, and imagining that he has acquitted himself to the satisfaction of his masters, let us try to estimate dispassionately what has happened to him.

He has changed his school and the social status of his schoolmates without altering his home surroundings and his relations. His parents have had to clothe him better than his brothers. He has had himself to modify his methods of speech—his form-master has seen to that. The organised school-games of to-day have absorbed his half-holidays and incidentally estranged him from his former associates. In fact, his scholarship has made him more or less of an alien at home, and somewhat of an intruder at school. What of the poor boy's happiness? If, as is generally the case, he is a "good fellow," he is continually subject to two sets of forces; he is anxious to be loyal to his parents and yet to be a credit to his school. But the two things are generally incompatible. "No man can serve two masters." One of two things generally happens. Either he remains true to the traditions of his class, and is voted "low" at school; or, assimilating the best ideals of his form-master and his school, he finds himself out of sympathy with father, mother, and brothers, and is by them disposed of as "stuck-up," or a snob. But, be it remarked, in both cases, so far as the boy is concerned, he is unhappy. Judged by Pope's standard, his life is a failure.

Nor is this the worst. His school career finished, he has to set about the business of life, that of providing himself with the things necessary for existence. Failing to appreciate the dignity of labour, his father has for two or three years dinned into his ears that he must do something "better" for himself than work at a trade. The boy, hearing that this class-mate is going to be a doctor, that one a lawyer, a third is going into his father's business, cannot reconcile himself to following the course marked out for his brothers; he hates the thought of manual labour—one of the results of his school training, for in what secondary school is anything other than "engineering" considered respectable, so far, that is, as working with the hands is concerned? How can a boy of sixteen be expected to console himself with the thought that after his apprenticeship his education will mark him out for advancement, and that while other boys of his class remain workmen he passes on to become a foreman or the director of others' labour? In nearly every case such a boy as the one whose career we are considering does not adopt a trade. He becomes a clerk, an office boy, or some other ill-defined sort of servant, and in nine cases out of ten remains a clerk with a small income and disappointed hopes; he is liable to dismissal at a short notice, and finds himself in a position which, for usefulness and for its chances of happiness will not compare with that of his less educated brother who never rose above the fourth standard of the elementary school, and in due course, following the footsteps of his father, learnt a trade and became an independent citizen. In other words, it is not enough to give the bright elementary school-boy a scholarship to the grammar school. Something else is imperatively necessary, about which a word or two must be said before finishing these remarks.

The case of the secondary school scholarship winners who proceed to the older universities, or to some university college, is similarly disappointing. Many of them are the sons of small tradesmen, or of fathers with a few hundreds a year. At these seats of higher learning, with a scholarship, the money value of which is not sufficient to keep them in that station of life to which the scholar-

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ship has called them, they must do one of three things. They must benefit by the heroic self-denial of the people at home, or run into debt at college, or live in such a way at the university that they earn the epithet of "outsider." Nor does this complete the unsatisfactoriness of the scholarship system as at present arranged. Imagining the young man to have worked properly, and to have completed his course of study with credit to himself and to his tutor, what are his prospects at the end of his three years' stay at the university?

He possesses a satisfactory honours degree, but what is he to do with it? He is twenty-two or twenty-three years of age, and cannot think of anything in which any sort of unpaid training is necessary. His parents are expecting him to establish himself somewhere in such a manner that the glory of his position will repay them for their sacrifices in his behalf. Or, his tradesmen have a jealous eye upon him, looking to him to set to work to discharge the debts he has incurred.

The unfortunate graduate soon finds, however, that he is in no great demand. There is the Civil Service, but the vacancies are few and the competition keen. It is no use for him to think of the professions, for he has little influence and less capital. He is not old enough to take holy orders. Private secretaryships are rare and generally given to personal friends. True, there is schoolmastering, and it is into this career he most often drifts. It is by no means that he feels a call to devote himself to the noblest of the professions. He simply cannot help himself, for teaching is unique in this, or rather teaching in secondary schools is, it requires no preliminary training, and offers immediately an income which will provide food and raiment at least, though in the average case little besides.

So numerous are these graduates, with no particular aptitudes and no special knowledge of any subject of immediate commercial value, that the salaries of assistant-masters have become ludicrously small. Mr. Rouse, the Honorary Secretary of the Assistant Masters' Association, has said, "The present state of things is most dangerous, and when known is likely to cause a serious fall in the quality of teachers. In small schools we find university graduates accepting £15 per annum resident, or £60 non-resident: the general average is probably below £120, though statistics are hard to get. But the range of salaries in public schools, with half-a-dozen exceptions at most, is too low to secure a supply of first-rate men. There are salaries at Bedford and Cheltenham as low as £100 a year non-resident, and the usual range is from £150 to £250, with the off-chance of a house-mastership to keep men in hope, or the precarious aid of laborious private tuition." Without any exaggeration such emoluments, after many years of study, may be described as paltry and inadequate. Our scholarship winner can obtain little indeed for his industry and can scarcely be said to improve his position by securing a scholarship.

Are scholarships, then, unnecessary and undesirable? By no means. The mistake which has been made in the past has been to regard them as ends in themselves. Local authorities and private benefactors have imagined that everything necessary has been done when a scholarship has been awarded to a boy to take him from one place of education to a higher, whereas if this alone is accomplished it is most often the worst thing that can be done for him. Without improving his chances of material success we destroy his chance of happiness and contentment. To secure the better education of a number of our future citizens is a good thing only provided that we take steps to ensure that suitable occupations are found for them, in which they may improve the work of the nation and add to our national resources. Though the elementary-school boy is taken from the class in which he was born, yet, if this second necessary step were taken, since he has been converted into a productive person of a higher order than his father, there is no reason why he should not be a happy, contented member of the social stratum into which he has been raised by means of his scholarship and the subsequent assistance rendered to him. In such circumstances both the boy and the nation would be benefited.

Much the same is true of the youth who gains a university scholarship. At present we are content to give him a more or less satisfactory education, to create new wants in him, to make him dissatisfied with the style of living in his father's house, and then to leave him to find work for himself in a world where there are already more unskilled workers than work. The worst of it is, too, that we have let the youth grow into a young man not only without teaching him some useful and remunerative occupation, but we have encouraged him to regard book-learning and athletics as the only important things in life. At the end of his college career it comes to him as a sudden shock, a surprising revelation, that work is the great business of being.

It is time, many sensible and experienced men of the world assure us, to consider carefully whether there is not too reckless a prodigality in scholarship awarding. Would it not be better to give half the number (making our selection twice as carefully) and to devote the money saved in this way to providing suitable openings into manufacturing and commercial life for the children we have educated by the scholarships we give them? It is well occasionally to look unpleasant facts in the face. The truth is that we must always have more "hewers of wood and drawers of water" than any other class of workers. The great majority of mankind, moreover, are fit for nothing else than to work under skilled direction. The education necessary for the wants of the ordinary working man is now abundantly available without the help of scholarships; these may well be reserved for the education of the exceptionally endowed boys who will, with the necessary higher education, make intelligent and humane overseers of the labour of others.

While no efforts should be spared to secure

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all the talent born into the nation so that it may become productive and improve the commonweal, no good end is served in educating large numbers sufficiently to make them despise manual work and to regard themselves as superior to their less ornamental, though more useful, relations, without endowing them with the power of adding to the nation's resources. The problem is worthy the attention of all serious educationists.

FORM MANAGEMENT.

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THE FORM-MASTER.

WERE I asked what is the first essential of a good Form-master, I should reply that he must be able to rouse and maintain a strong *esprit de corps* in the form itself. Once this is established—no easy task—the Form-master has a powerful engine which, if he but know how to drive it, is capable of easing, if not doing, much of the drudge work of form life. For, it cannot be hidden, there is a great deal of drudgery to be done, sheer hard work which is not shown in a model lesson.

Two questions present themselves. First, how to induce such an *esprit de corps* in a form, and second, how to control it when produced. There is small hope of gaining it unless the Form-master be tactful, and tact may be acquired. I have known one or two masters who were not remarkable for their tact in daily life, but yet had cultivated it to a degree for form purposes. Without it the thorough control of a form is sure to present difficulties, and these mean loss of time, wear and tear of masters, and other evils.

Let the Form-master think of his form as a small kingdom to be wisely, almost wilily, governed. Just as a monarch to some extent simulates interest which he cannot always feel, so the Form-master must be ready to show an interest even in things in which he personally has no interest. There must be a devotion to small and trifling affairs, a professional patience; and this, to tell, must be daily cultivated. To maintain an interest in each individual boy a good memory is a useful adjunct, but, failing this possession, a note-book will be found valuable. Such a book contains the boy's age, notes on his peculiarities, and results of various experiments where these are necessary. No doubt a number of men can carry all such details in their memories, but it is questionable whether even these will not find such a note-book of distinct service.

A cultivated interest in the form in many little matters outside school work helps the machinery. Suppose, then, the master in front of his form. Is he absolutely tidy and neat? Because these minutiæ count. Is he in time? Has he prepared, not merely the work for the day, but the methods by which he is going to carry on the work? The successful teaching of the best known of his subjects requires thought as to the methods to be employed. The same subject may be taught year after year, but the true teacher will always be mending his methods. If he do so, he will reap a reward in the zest and zeal of his boys. This preparedness of the teacher not merely of the subject-matter of his lessons, but of the method of imparting it, is a *sine qua non* to continuous good work.

Is the master alert to every sign of what is going on? Ready to detect anything, from the putting of a hand to a pocket to the change of a boy's mental attitude? A master cannot be all this unless he be in the pink of health, and it would doubtless pay many headmasters, who have not yet adopted the plan, to lighten the teaching hours of the Form-master. It is my belief that a master will do far more effectual work if he be limited to four actual teaching hours a day. For the sake of the layman it may be added that this does not imply that he will not work double that time. He will. But he will do better work if his teaching time-table is small. One of the most successful headmasters I have heard of used to insist on his masters taking an hour's work and an hour's rest alternately through the teaching day. The plan worked marvellously well.

One other thing: the Form-master must be in earnest. Welcome, then, to the day of registration of teachers, when amateurs doing time before taking Holy Orders shall be no more, when those who teach little boys to reduce all money amounts to farthings shall have passed away, and when only professional educators are employed in secondary schools and in our preparatory schools, as well as in our public elementary schools.

DISCIPLINE.

The Form-master is less dependent upon the headmaster than is his colleague the specialist. The Form-master, once he has got hold of his form, is but rarely obliged to punish: he sways public opinion, which acts like a steel barrier.

Recalling my own masters, I remember one in particular who always brought an air of discipline into the room. His tread was that of a soldier. He always faced his class. There was written all over everything he did the determination to secure an advance for his pupils. His motto might have been, "Ye shall progress daily." Yet I have learnt since that he had many weaknesses. The secret of his success lay in the inward determination which he brought into the room and diffused around. To pass through his form made a difference to a boy something akin to the difference wrought upon an ordinary soldier by our own drill system. But I do not wish to press this kind of discipline too far, and just as the soldier must not be robbed of his individuality, so the Form-master must use his brains lest his pupils lose theirs. At a school I was at, the boys in a certain form used to complain of stiff necks after a period with one

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of the masters. He made them watch his face throughout the lesson. Where I think he was wrong was in forcing the act directly. They should have been watching him, but it should have been unknown to them that they had done so. Good machinery secures the end without too great a display of the power and its method of exercise. I think these maxims best followed, though I do not deny success without them. These are for an average man :—

(1) Never be late.

(2) Never slovenly.

(3) Never set work, or imposition, without seeing that it is completed.

(4) Always be in good health.

Of these the first three are comparatively easy. The last is, to my mind, the most important. The varying moods of a "seedy" man are the most pernicious things for a young boy. If the master's health be indifferent let him seek another sphere of employment, or he will work a certain amount of positive harm. There ought to be as rigorous a medical examination for the profession of schoolmaster as for the Services.

The Form-master will be, of course, dependent upon the headmaster for his system of punishments. Fortunately the headmaster who does not systematise his punishments is becoming a *rara avis*, but for the Form-master who finds himself in a school where there is no system of punishment there is only the course of systematising for himself. This can be done by recording in any way every punishment. Record it and see it carried out. This method will speedily diminish the amount of punishment to be given.

However, as I have said, the Form-master who is an artist at his profession will need to punish but very, very little. The analogy of the diminution of punishment and crime in this country, I think, holds good. Really educate your boys and they will cease to be wrong-doers. I can quite imagine being bitterly assailed for this remark, but I would urge my opposers to consider that with every form there must be difference of method. The third form's world is not so large in its limits as that of the fourth form.

Marks.

It has been my lot to hear many maledictions uttered against different systems of marking, and it is no original view that marks are an undoubted evil, but all the same the science of marking is a growing one. The reason for this is, I think, a twofold one. By a carefully-arranged system of marks the headmaster can at a glance see what the school is doing. Thus they are useful to him and to the parent. But they also can be made to assist in producing that keen energy which makes light of a thousand difficulties. The wary Form-master will be thankful if he has a system of marks, but he will teach the form to esteem them as merely part of the machinery.

Simplicity of marking is a boon to a Form-master because of the saving of time. In the upper forms of a school it would be difficult to devise a better system than the old-fashioned Oxford one of marking work as being in a certain class, α, β, γ, &c. But for lower forms a maximum of 10 marks for each hour, the subject being kept separate, is a simple way. At each week-end the marks are added and reduced to a maximum of 100 per subject.

At term-end these maxima are again reduced to 100. For the three terms of the year the average of the three terms' marks is taken; thus giving a maximum of 100 in each subject for the year.

It is a useful thing if the gong or bell rings two or three minutes before the end of each hour. This is the signal for entering marks, and other small matters can be arranged before starting the next period of work.

General Remarks on Form Teaching.

Given an ideal form—one which is full of spirit and pluck, yet thoroughly disciplined, one which contains no great discrepancies in the class of previous training of its members—given these things, a Form-master has still to exercise the topmost of his powers to produce really good educational work.

Suppose you are beginning the school year. Divide up the work into periods, allowing for recapitulation. Keep a "subject" journal, which shall be a sort of chart and log of that particular subject. Try this systematising for one term, and note its effects both on yourself and on the form.

In mathematical work give constant test papers —they can be bought for 6d. a packet in great variety. Set your test paper so that a small part of it requires individual genius. The test paper must be ever pulling out the mental limbs of the form. In a certain school there is a formal written test in mathematical subjects every fortnight, and the mathematics of the school, though once in a bad way, are much improved. In all subjects a properly-worked system of test papers pays. The results should be recorded as being useful for reference to the master and as serving as a stimulus to the boy. I invariably keep the written work of my boys for the school year, the mathematical work in books, other work folded, dated, and shelved. If any Form-master has not tried this as an incentive to interest, let him do so for one term only, and he will not discontinue the practice. It makes the work live. One sees the results of labour growing, and the growth is far more fascinating than any botanical or biological one. Make no secret that you keep the written work, and your boys will be more careful. They will not like the idea of bad work being stored up against them.

Most masters are collectively agreed that the blackboard is an essential to teaching: but walk round the class-rooms of any English school you like, and rarely will there be found drawings, or writing, so good as they might reasonably be ex-

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pected to be. If a Form-master is an indifferent performer on the blackboard, he can console himself with the thought that a little practice, say an hour a day, for a year, will make a complete change in his work. We are nearing the time, I hope, when one of the tests for a teacher's certificate for secondary schools will be clear blackboard demonstration.

If some weary man says that a good blackboard-worker is born, but not made, don't believe it. To prove your disbelief try practising for a month only. As to what to practise, for drawing copy any rough sketch of your own from paper, and for writing, copy a few words again and again till they are markedly clear and distinct.

To go forward with your scheme of work without needlessly tiring your boys, constantly change your methods. Every lesson should be a change from the last, and tiring though this may be to the master, he must face it if he wishes to get the greatest results from his work. We all know that keen feeling a clever preacher arouses—one who never treats the same subject twice in the same way. Try to be fresh and new, inspiriting even when discouraged. With the trying will come the facility for doing. In a word, be an actor. With the acting comes greater ease for the part. A Form-master who is something of what I have said he should be will induce a marked advance for his form in the school year.

Any Form-master can do all this and much more if he be gifted with enthusiasm for the work. If he be not, let him speedily depart in peace. His place is wanted by other and better men.

HISTORICAL INACCURACIES.

By A. JOHNSON EVANS, M.A.

WHETHER history is a science or a philosophy or neither, we will not undertake just now to discuss. But it is quite certain that, for the purposes of the schoolroom, it can never be either till our text-books and our teachers have to use, and to make their pupils use, the technical words of history in a technical way. Woe betide the person, whether teacher or scholar, who should use "triangle," *plus*, or *minus* in anything but its exact sense! But in history it "does not matter." And the consequence is a slovenliness of speech, and therefore of thought, that robs historical study of much of its value. It becomes, what it is so often alleged to be, a mere exercise of memory, a subject fit only for the junior forms, or for those "modern" sides to which are relegated all the inferior wits of the school. Without going deeply into the matter, we propose to suggest in this article a few typical instances of this slovenliness of speech which present themselves to those who have to criticise the work of ordinary pupils.

Plato and Aristotle put into currency some half-dozen terms of political science which have become popular, and therefore have lost all definiteness of meaning, *e.g.*, "monarchy," "aristocracy," "oligarchy," "democracy." They are now used to describe the various forms of government which exist in Western Europe. To these have been added such words as "empire," "republic," "commonwealth," &c. What they mean no one has any clear idea. They have been applied for historical, often what we might call accidental, reasons, and they are flung about with the wildest unreason. Connected with this confusion is the use, or rather misuse, of the word "theory." How often we are told that "in theory" the King can do this or that, but "in practice" it is otherwise. Suppose astronomy were written and taught on these lines! "In theory the sun goes round the earth, but as a matter of fact—"

In these instances the misuse of words arises from false and confused ways of thinking. In others, again, the misuse does not correspond, perhaps, to such deep misunderstandings, but lies more on the surface. When John "signs" Magna Carta, when James II. "passes" a declaration of indulgence, when Hampden is "found guilty," or Henry VIII. seeks a "divorce" from Catherine of Aragon, it requires merely a short effort of thought or a modicum of information to detect the fallacy. Perhaps the finest illustration of this confusion of words is to be found in a book which is not yet "dead and buried," though of quite respectable antiquity—"Mangnall's Questions." In this work the pupil is taught to say, in answer to the question, "What was Magna Charta?" "A Bill or Act of Parliament granting the barons and citizens greater privileges than they had ever enjoyed before: by this Act, which was passed A.D. 1205, the obligation of the feudal law was abolished and English freedom restored."

The mention of this instance reminds us of the "feudal system," as to which in our English history there are more, and more persistent fallacies than in regard to any other subject, except, perhaps, Parliament. If only teachers before setting out to teach the "Norman period" would quietly define, for their own guidance, the words "feudalism" and "system," and then ask themselves to give answers "with proof" to the question, By whom and how was feudalism introduced into this country? we should be saved a quite incalculable amount of slipshod talk.

As to "Parliament," the current fallacies are legion. Some of them were pointed out in an article in THE SCHOOL WORLD for July, 1899. Here is another. In a confused way, which almost defies exact statement in black and white, our pupils have a notion that Parliament is perpetual. There is, in reference to the English Parliament, a confusion something like what exists in ignorant minds about "Pharaoh" and "the Pope." The fallacy is specially strong about the Long Parliament of the 17th century, and it is commonly supposed that "Parliament" invited over William of Orange in 1688. The vaguest notions prevail as to the effect of "adjournment," "prorogation"

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and "dissolution." "Simon de Montfort founded the House of Commons"—so runs the popular legend; and there is a widespread belief that it has, literally, existed continuously ever since, as if the "House" were of imperishable stone. Another famous "foundation" is the "British Navy." Here the confusion is worse still. It has so many "founders"—Alfred, Canute, the Edwards, Henry VII. and VIII., Elizabeth and Cromwell, all these "founded" the "British" Navy. Yet it has had a continuous, ever triumphant career, its one or two unfortunate failures being due, of course, to some one's wickedness; at least, so our text-books say, or at least give us to understand, being dumb on the periods of neglect.

A fruitful source of fallacies is the biographical treatment of history. This method, of course, has its advantages, and in the earlier stages of history learning it is eminently useful; but in the later stages it tends to obscure the deeper causes of things. When we are told, *e.g.*, that Columbus discovered America, that "Mrs. Masham" controlled the course of the war of the Spanish Succession, that the Powers of Europe combined to crush Prussia in 1756 because Frederick said nasty things about the Pompadour and Elizabeth of Russia, and that "black men fought on the coast of Coromandel and red men scalped each other by the Great Lakes of North America, in order," as Macaulay says, "that Frederick might rob a neighbour whom he had promised to defend," we think the personal motives of rulers are much overrated as factors in the world's progress. When we attempt to judge (how rash it is at the best!) the foreign policy of English statesmen, to which should we give the greater weight? Their personal idiosyncrasies and "selfish ambitions," or such a permanent fact as the alliance with whoever "owned" Flanders and its manufacturing cities, friendship with which was absolutely necessary to England's welfare till their ruin in the Spanish wars of the 16th century?

Of ecclesiastical matters we can at present but touch the fringe; they would require an article to themselves. The ignorance as to the simplest facts, arising partly from prejudice and caution, partly from want of text-books written by those who know and sympathise with all parties in turn, is simply appalling. We can only ask teachers to supply themselves somehow with definitions of such terms as "Catholic," "Protestant," "Episcopacy," "Presbytery," the "Church of England," and with some ideas of the respective powers in various ages of Pope, bishops, convocation, &c, to clear the air of some, at least, of the fog in which we at present are lost.

In the use of titles there is still much confusion. "Emperors" are so common nowadays that our pupils get an idea that an emperor is simply something greater in some vague way than a king. The vagueness is all the greater because of such "Emperors" as he of Hayti. We forget that till the beginning of the 19th century there was but one emperor and one empire. We therefore have entirely lost the meaning of that old title and speak of Emperors of Germany, even of Austria and of Spain. Professors Bryce and Freeman have as yet written in vain for many of us. Minor blunders in this direction arise from ignorance that John is the first who can properly be called King of England, that Henry IV. is the first King of France, that the Emperor Charles V. was the first real King of Spain, though his father called himself Philip I. of that country.

Similar blunders arise from ignorance of monks and friars and their various orders. Martin Luther was not a monk; he was an Augustinian friar. The confusion between "England" and "Britain" has given rise even to popular discussion, sometimes with much sound and fury. And, finally, much rubbish is still produced *à propos* of "natural" boundaries, "true" policy, "real" greatness, "proud" prelate, and many other such phrases which *may* be correct, but for the use of which the writer can give little reason, and which are often used to cover ignorance and fill the page.

The moral of all this article is that we should be careful to know what we really mean when we use words in history. Define all the nouns and verbs, take care to use the right nouns, adjectives and specially verbs, and so save ourselves and our pupils from slipshodiness. Thus, and only thus, will history earn for itself a right to a place in the schoolroom, because, used only thus, it will afford a means of training and be something more than so much "general information."

NATURE-STUDY IN SCHOOLS.

By DAVID HOUSTON, F.L.S.
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NATURE-STUDY is a subject that might well be taken in every rural school. It deals with things more or less familiar to the country-bred child, and strongly appeals to his natural desire to know about things. In the open air, too, the wits of children are sharper and their interest keener and longer sustained than in the less buoyant atmosphere of the schoolroom. It can be introduced as early as the kindergarten, and from thence onward through all the forms or standards of the school until the pupil is old enough to take up the systematic study of botany, geology or other special branch of natural science.

In the teaching of nature-study to children different teachers will, of course, adopt different methods or lines of work, but doubtless the most convenient plan will be to take plants as the central subject and work in, as it were, the other forms and forces of Nature as related in one way or another to the life-history of a plant. For example, we notice growing in a field or by the wayside a particular plant, and direct attention to its "habit" of growth, and the more obvious characteristics of its stem and foliage, and, if

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possible, also to its flowers and fruits. While doing this, however, we must (amongst other things) refer in more or less detail to the nature of the soil in which the plant is rooted, the relation of the roots to moisture and the foliage to light, the character and vigour of immediately surrounding vegetation, the animal enemies of the plant and its special method of withstanding their attacks, the relation of bees and other insects to the fertilisation of its flowers and the means adopted to secure the successful distribution of its seeds. Thus, the study of a single plant will give plenty of scope for nature-study in its widest sense, and under wise and sympathetic guidance will also afford ample opportunity for the exercise of reasoning on the part of the youthful student.

A study of never-ending interest is that of the relationships existing between plants and their environment, and of the various adaptations induced by the struggle of wild plants for the necessities of life. The delicate smooth skin and spongy tissues of aquatic plants may be compared with the tough and often hairy integument and abundant woody tissue of well exposed land plants. The habit of almost stemless, close-sitting forms of vegetation like the daisy may be compared with the long, slender and rapidly growing twining stems of the bindweed; where in the one case room is secured by covering a certain area of soil with a closely applied rosette of leaves, and in the other by raising itself by climbing upon the body of its fastest growing competitor. The tall, shade-loving plants, the climbing herbs and shrubs of the hedgerows, the crouching plants found on the less frequented pathways, the plants with underground runners so troublesome in arable land, the shade trees and fruit trees, are here mentioned merely with the object of suggesting the wide range of subjects available for out-door lessons on the natural history of plants.

It will afford capital practice in field work to select a definite bit of country and begin by working out the most striking and easily observed features of its physiography and natural history. There is a small common close to where I write that may be used to illustrate what I mean. It occupies the greater part of the top and one side of a hill that slopes down to a rather sluggish stream that meanders through meadow land in an easterly direction. The slope is on the right bank, and therefore faces the south, so that it is well exposed to light and well sheltered from the north wind. The valley is wide, and the opposite slope is richly wooded with elm, oak and hornbeam, and the farms principally devoted to corn-growing and pasturage.

The top of the hill and for some distance down the slope the surface soil is sand. Further down still and stretching away to the alluvial meadow land is stiff clay. The sandy area is, of course, well drained and dry, and is covered with a very characteristic vegetation. Dense clumps of furze intermixed with miniature lawns, carpeted with a close turf of sheep's fescue grass, is the prevailing feature, but growing under or among the branches forming the irregular spiny fringes to the clumps, and here and there over the open spaces, are numbers of most interesting plants peculiar to such situations. The *Potentilla tormentilla* supporting its slender stem by leaning on its shrubby neighbour, and the gregarious sheep-sorrel dotting the common with glowing patches of red, the spreading birdsfoot and sand spurry, the densely tufted buck's-horn plaintain and the delicate little white-flowered heath galium, together with here and there thick mats of *polytrichum*, or hair-moss, and occasional clumps of lichen, make up the chief items of the flora.

Then, where the sand thins away and the clay appears, we see a gradual transformation of the plant inhabitants; the *Potentilla* gets ranker, and bracken fern, bramble and dog and field rose compete with the furze for mastery of the common, while *nardus* or mat-grass takes the place of sheep's fescue, and milkwort and rushes and creeping willow grow abundantly. At particular spots along the junction of the two strata, where the impervious clay holds the drainage of the overlying sand, are delightful miniature bogs crammed full of typical marsh and bog plants. Sphagnum moss is, of course, the predominant form, and its delicate soft green mantle is everywhere beset with the bright rosettes of sundew or broken up by the coarser growths of spearwort or bogbean. Scattered in thick profusion and conspicuous above all things are the flowering spikes of marsh orchis and epipactus, the long-stalked silky white plumes of cotton sedge and the flaunting red blossoms of ragged robin, while standing sentry-like about and around are the tall stately stems of the marsh thistle enveloped so oddly in its spiny decurrent foliage. In one or two places patches of quaking bog may be discovered where water poa grass has taken full possession, and its matted roots, while forming a dense tenacious covering to the semi-fluid pool below, is elastic enough to sink and heave with startling suddenness under the tread of the unsuspecting rambler.

Still further down the valley we get on to the meadow land, where grass is of course the chief element in the flora. Meadow poa, meadow fescue, crested dogstail, rye grass, meadow foxtail and Yorkshire fox intermixed with meadow pea, black medick, sneezewort, meadow thistle, meadow and bulbous buttercups, daisy and many other species may be found.

The brook after heavy rains is subject to sudden floodings, so that the banks, especially at particular spots, get covered with silt for yards away from the edge of the water, and it is interesting to note and instructive to study the patches of plants, strangers to the meadow, that spring up from seeds brought down from the higher land and which get stranded with the rich mud on the ebbing of the flood water. Upwards of forty distinct stranger species have been counted in one meadow—field poppy, purple and white dead-nettle, ground ivy, beaked parsley, stinging nettle, white bryony, woody nightshade, sloe, and wild rose may be given as examples.

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The river itself is rich in water plants, nympheas or pondweeds cover the deeper pools, and patches of arrowhead or brooklime choke up the shallows, while bulrushes and sedges, tall docks, figwort and purple loosestrife fringe the margins, with here and there alder and willow trees leaning across the water, their denuded roots affording convenient lurking places for numberless aquatic animals.

From this very brief description it will be seen that any locality is likely to yield interesting facts to the observer, while no locality, so far as its natural history is concerned, can be of greater interest to himself than the student's own particular parish. It is everywhere obvious that plants living under the same conditions have often a tendency to assume similar external forms, although they may be of widely separated natural families. There appear to be three chief factors in determining plant form—the nature and quantity of the food, the amount of available moisture during the rapidly growing period, the range of temperature, and the intensity of light. For example, on the dry moorland are spiny plants with reduced foliage, or plants with hairy leaves or other drought-resisting contrivances. In the wet marshland rush and grass-like forms prevail, while in the water itself plants with sword-like leaves or broad-bladed leaves with long spongy footstalks frequent the margins, while totally submerged vegetation, with narrow or even threadlike foliage, or plants with broad floating leaves often on much elongated petioles, are found in the deeper water. A succulent form is frequently assumed in order to resist the effects of drought, as in houseleek, or of a saline condition of soil as in marsh samphire. Particular attention ought to be paid to the effects produced by different external conditions upon the same species—a matter of great importance in the culture of plants.

Closely associated with Nature-study is the cultivation of plants, and much may be done by the teacher to strengthen that love for garden work already possessed by most children. A school garden in which the older children are allowed to work, and in which flowers, fruits and vegetables are grown for demonstration purposes, is a much-needed addition to every rural school.

It cannot be expected that every teacher in our rural schools will take up the subject of Nature-study, but it is very desirable that as many as possible should do so. From the teaching point of view every effort must be made to guide the young pupil into closer sympathy with Nature, to train him in accurate observation, and, as he gets older, to teach him how to record his observations briefly and truthfully. Teachers in rural schools anxious to take up the work of Nature-study with their pupils in the higher standards are often at a loss to know how to conduct their classes in the field. To meet this difficulty (real only in the initial stages) recording schedules and pamphlets have been prepared for the use of country schoolmasters and schoolmistresses in Essex, and these have been found helpful in the pioneer stages of the movement. One of these schedules is given as an appendix to this paper. It is held that the use of such aids to outdoor study of plants by the pupils in upper standards gives point and precision to the enquiry, compels each pupil to consult Nature direct for a definite answer to a definite question, and secures at this stage a degree of accuracy on the part of each pupil that would be difficult to obtain in outdoor class-teaching in any other way.

As to the educational value of Nature-study, there can be no doubt. Its teaching should quicken and sustain that instinctive interest in natural objects that is possessed by all children: it should train the eye to quick sight, and give oft-repeated practice in comparing things, and noting the agreements and differences between them; it should awaken a spontaneous questioning of Nature as to the why and the wherefore of simple phenomena, and suggest methods that might be easily adopted in pursuit of an answer; it should, in fact, give exercise to every sense, encourage thinking, foster a desire for natural surroundings, and be a powerful influence in the physical and moral education of the child.

COUNTY OF ESSEX TECHNICAL INSTRUCTION COMMITTEE.

BIOLOGY SECTION.

FIELD STUDIES IN NATURAL HISTORY.—SCHEDULE I.

NATURE-STUDY IN ELEMENTARY SCHOOLS.

NATURAL HISTORY OF PLANTS.

A Recording Schedule suggested as suitable for use by pupils in upper standards in their out-door study of plant-life.

NOTE.—Of course it is not expected that you can gain all the information required by a *single* visit to the growing plant; on the contrary, it is essential to a proper understanding of its life-history that you keep it under observation for some time and thus note the progress of growth and development with the changing seasons.

Name of plant.

(1) *Habit* of plant, that is its form and general appearance—tree, shrub, climbing, creeping, rosette form, &c.

(2) *Habitat* or *place* of growth—where found? if in hedgerow, corn-field, pond, &c., and if it grows *singly* or in *colonies*.

(3) *Conditions* of growth as to *soil*—clay, loam, &c.; and as to *light*—shade, partial shade, full light, &c.

(4) Its immediate *plant companions*—give either the names or the habits of these.

(5) Character of the *stem*—herb-like or woody; if internodes are short or long: surface is rough, hairy, &c.

(6) Make outline *drawing* of a leaf, and sketch in the chief *veins*.

(7) Date of gathering *flower;* its colour; is it scented? can you find honey in it?

(8) Number of *petals*—are they all the same size and shape?

(9) Have you ever noticed insects visit the flower? if so, what kind were they—bees, butterflies, moths, &c.?

(10) Can you discover the organs that produce the pollen? Is there any pollen still there?

(11) Date of gathering *fruit*. What kind of fruit does it bear, and what is the number of seeds in each? How do the seeds get distributed?

[N.B.—The above is cast in the form of a Schedule in which blank spaces are left for the pupils to fill in their answers.]

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THE TEACHING OF ENGLISH IN A SWEDISH SCHOOL.

By Daniel Elfstrand, Phil.Cand.
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IT would be a mistake to suppose that the first nine or ten weeks' work described in a former article[1] is devoted to nothing but phonetics and pronunciation. All-important as is the part assigned to these elements at the beginning of the English course, side by side with them other factors have to be brought into play from the very first if the object aimed at is to be reached within measurable time. My object is to get my pupils to understand the spoken and written language with tolerable ease, and enable them to make themselves easily understood in speaking and writing the language.

How to realise this object? No more adequate answer could be made to this question than that contained in W. H. Widgery's words:—"Let us get into the language as soon as possible, and stay in the language as much as possible." This is exactly opposite to the grammar method, which tells us much *about* the language, but gives us very little *of* it. An obvious corollary of the view of language teaching as first stated is, of course, that the foreign language should be allowed from the first, be it by ever so small and inconsiderable advances, to take the place of the mother tongue, the functions of which it will be called upon later to discharge to the fullest extent. But then it would be a very unwise plan to allow its most powerful rival free play during the time of learning. What is demanded is really nothing but necessary concentration, without which no subject can be satisfactorily mastered.

Accordingly, in preparing and hearing the first simple lessons consisting of a few isolated words only intended to teach some important sound or sounds, I take occasion to introduce some English phrases, the meaning of which suggests itself quite spontaneously, and which by constant use are soon assimilated. Similarly English is utilised more and more in communications between the class and myself relating to ordinary acts to be carried out by the children, the mother tongue being employed to bring out the meaning only when the latter cannot easily be arrived at by direct association. And as one word gives rise to another, so there grows up insensibly a little stock of words and phrases around the first simple elements of the subject. It is, however, when, after a fortnight or so, we pass on to the phonetic texts of the reading-book that a more systematic proceeding of this kind begins, for it is on the reading-book that I have based my teaching. It is to me the centre round which all the other parts of the work are grouped, or from which they radiate. Teachers generally can hardly be expected to offer their pupils unvaryingly the same pure manifestation of the foreign language as the genuine product to be found in the reader, which, moreover, plays the important part of a permanent guide to the pupils' minds and eyes. This, then, is the source to be made living by the teacher, from which our pupils have to be chiefly nourished, and if their knowledge of grammatical categories has not received flesh and blood from this living product, it will be nothing but a skeleton, irrecognisable, all but useless.

But genuineness as regards the idiom is the *conditio sine qua non* to be insisted on in this first book to be put in the children's hands. So far as in me lies, I have once and for ever parted company with the disconnected-sentence method as being too abstract, not affording the requisite concrete basis, and if any age is in want of concreteness it is childhood. Hence the high value of object teaching also in this department, and therefore the reader selected for use should contain ample material for this sort of teaching, the more familiar to the child mind the things described the better. Thus I have found that simple descriptions of the human body, of the schoolroom, of common objects of everyday life, &c., do admirably as starting-points. A child will thoroughly master in a few days some dozen names of new schoolfellows he has never seen before, but try to get him to remember as many names without any representatives and you will at once see the difference. Recent experiments have convinced me that the use of pictures is also of excellent effect in connection with language teaching.

It is a good plan to have in the reading-book a sprinkling of short, easy dialogues on familiar subjects among the narratives and descriptive pieces. These dialogues should serve the double purpose of introducing, by slow degrees, those pithy and essential elements of the colloquial language known as "idiomatic expressions," without which it always appears more or less emasculated, and of supplying, as far as possible and without detriment to the naturalness of expression, forms and phrases of special grammatical importance not sufficiently provided for by the other parts of the text. They will also prove helpful as inducements to start and maintain conversation.

As has been stated before, in working through the phonetic texts with my beginners the pronunciation must have the lion's share of our attention; but even in this stage my efforts are directed to giving my pupils some grasp of the vocabulary and bringing them into close touch with grammatical rules and their applications, such as plurals of nouns, simple forms of verbs, some pronouns, &c. When, after finishing the phonetic texts, we turn back with a view to assimilating the traditional spelling of the same texts, care is taken that the children's knowledge of vocabulary and grammar should be widened and deepened. But no particular study of the paradigms of a grammar is as yet needed, as what is required can be absorbed directly in a much more effective way from the material of the reading-book. My

[1] The School World, January, 1901.

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method is wholly inductive and imitative. When, for instance, in a description of the human body the children have read over and over again passages like these:—"I can open my hands; I can bend my fingers; I can do a great many things with them; I can work with them and I can write with them,"—there is not the slightest doubt that their grasp both of vocabulary and grammar is better promoted by making them answer such questions as, "What can I (you, he or she) do with my (your, his or her) hands (fingers)?" than by merely contenting myself with a translation into Swedish and an analysis—in Swedish—of grammatical forms, or even by making the children retranslate into English the same sentences given by me in Swedish. This, however, must not be understood to mean that I never find it appropriate to use translation or retranslation.

Or, to quote another example. The children have read and learnt by heart this dialogue:—"How old are you, Jane?" "I am twelve years old." "Have you any brothers and sisters?" "Yes, sir, I have one sister and two brothers." "What's your sister's name?" "My sister's name is Alice." "And what are your brothers' names?" "My brothers' names are Charles and Robert." "What is Charles's age?" "He is nine, sir." "And Alice's and Robert's ages?" "Alice is seven and Robert is fourteen." The cross-questioning now begins. "Who is Jane?" "Jane (she) is a girl." "How old is she?" ("Has she any brothers and sisters?" "What's her sister's name?" &c.) Several pupils have had to answer these questions, when turning to one of them, I say: "Tell me what you know about Jane." Thus a small narrative is brought about, and after it has been repeated over and over again by a number of pupils, I call upon one of them to come up and write it on the blackboard. Finally the children have to tell me about their own brothers and sisters, and write their statements in the same way.

What has been gained by this method is, first, a fluent command of the vocabulary, and secondly, in point of grammar, a firm grasp of regular plurals, the genitive, and some verb forms. And the grammatical insight thus brought home sticks fast, being step by step acquired by the safe guidance of personal experience; it has been lived through. I also venture to think the training itself of a higher intellectual order than that which culminates in a recognition and repetition of isolated words, as it causes the children to "turn the fresh and free play of thought" on working out directly by induction sentences conveying full and independent meaning. When our opponents tax us with neglecting the necessary training, it only shows that they do not know where efficient training comes in. It is we that insist on the necessity of such training. But what about a training that leaves its objects helpless when confronted with some of the simplest and most natural tasks of a living idiom?

"Well, but do you never allow your pupils to make a regular study of grammar as such?" is a question that very likely will force itself on one or the other of my readers. Let me frankly confess that grammar is a thing that ample experience has taught me rather to dread, or at least hold in suspicion. To the abuse of grammar must be attributed the utterly erroneous method of modern-language teaching against which modern pedagogy, based on the mighty instruments of modern science, *observation*, *experiment*, and *induction*, has risen in arms. For never was there a greater delusion than the belief that a knowledge of the cut-and-dried rules of grammar *plus* paradigms and a scanty supply of examples could give anything like command over such a subtle and mobile subject as a living idiom. But, for all that, grammar you must have, just as well as in any branch of serious study you will want systematising and a clear and summarising survey. Only, first facts, facts in abundance, real, living facts, then these facts brought home to the pupil in the most striking way. Then only you will be ready to help your pupils to draw the conclusions, and embody them in a rule which will now prove a really valuable support. The study of grammar I would therefore treat, in a sense, as a sort of revision work.

In all this English is our means of communication, and the grammar employed is written in English. It is strange that even many of those who are in harmony with the reform movement should raise serious objections to using the foreign language in grammar-teaching. The argument is very often this: "When it is so comparatively easy and convenient to clear difficulties in point of grammar with the help of the mother tongue, why should I use the foreign language and run the risk of muddling up things and overtaxing my pupils?" But with the same sort of argument I may ask: "Why on earth should we strive with great efforts to learn to express our thoughts in English, when it is so simple to express them in Swedish?" And, "Have you realised what you lose by always conveying your comments and explanations in the mother tongue, and allowing your pupils to give their answers in it too?" It is not always the shortest way that leads safest to the end. Would it not be better for the sceptics to hold over their objections till they have submitted the method to a fair trial? And if they fail, if their pupils be found unable to digest the subject given in this form, why, it may be a sign that their teaching is affected with some other weakness.

Year after year the teaching proceeds on the lines now sketched, with such modifications as are called for, partly by the general and linguistic development of the students, partly by circumstances of a more external nature. Thus the learning by heart of text, which is the rule during the first year—the object being, of course, to arouse in the children a sense of the living language—is subsequently reduced by degrees, the combinative and associating powers being more and more trained to work by themselves; besides which, learning by heart carried to excess has a tendency to slacken interest in a subject. Hence it is con-

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fined to specially illustrative and interesting passages and to dialogues, which latter occur less and less frequently, it being the pupils' task in a more advanced stage to shape their own dialogues.

As regards translation, though perfectly aware of its mischievous influence when allowed free scope, I have not found it advisable to banish it altogether, convinced as I am that, when used with discretion, it may render the teaching as a whole some good services. For instance, when it is not possible to bring out the meaning of a foreign word or phrase by direct and cogent association—the safest way by far—it is in my opinion better to make a passing reference to a native expression than to have recourse to unwieldy paraphrases; only care must be taken that, as soon as the mother tongue has performed this office of handmaid, the foreign idiom is enabled by means of repeated practice to take over its functions. Then again, the time generally at disposal in schools for the learning of a foreign language will most certainly never be found sufficient to give so thorough a command over its resources as to allow us to think in it otherwise than within very narrow limits. On most points the mother tongue will assert itself irresistibly, there will be a constant conflict in which the native element will for ever keep the upper hand—I am not concerned with those who, thanks to exceptional circumstances, are placed in a peculiarly favourable position—and as surely as we have a mother tongue, there must always be a mental interchange between it and the foreign tongue in the circumstances in which most of us as children have to learn the latter.

Another noteworthy advantage of translation is the convenient and effective means of testing the grasp of a foreign text which it affords, but for this purpose it is by no means necessary to demand a continuous translation of page after page. This would, on the contrary, be decidedly prejudicial, as the mother tongue would wholly supplant its weaker rival. For my part, I call for translation only quite occasionally, when it seems in the least doubtful whether the pupils have grasped the meaning of some suspicious-looking phrase or passage, and after a piece of text has been scoured through once, it is read again in English once or twice, and finally broken up in questions and answers.

Without writing in some form or other, linguistic training would certainly lack a most important element—indeed, the crucial test of its thoroughness. In every stage it must come in. As mentioned before, writing from dictation on the blackboard is the form of it I first utilise, and it begins while we are engaged in the phonetic texts. Later on, when we come to the ordinary text, its importance is of course obvious in the first place as a means of inculcating the traditional spelling, but also because of the great help it affords in giving increased effect to the training of the pupils' ear, and in this capacity it is made use of occasionally for a long time.

The next step is to use writing in answering questions put in English, in asking questions, and, as a final test of the pupils' efficiency in every special case, in translating a few Swedish sentences made up exclusively of the material contained in the reading-books. All these exercises are, during the first year, carried out on the blackboard. In the second class exercise books are introduced, and the writing is now extended to reproduction of stories either read by the class or related three or four times by me. This kind of exercise seems to be of considerable value, and I reproach myself for not having utilised it in the past to the extent it deserves. It is also at the end of the first term of the second year that the first "theme" proper for translation into English comes on.

During the third and fourth year this exercise becomes a regular feature of our programme, recurring at intervals of two or three weeks, and being always performed under my eyes and without the help of either grammar or dictionary. This, again, is a point on which I expect many reformers will be at variance with me. My experience, however, is such that I could not do without this form of training. Even advanced pupils, who may have acquired a very creditable power of expressing themselves correctly and idiomatically when called upon to reproduce what they have heard or read, or even to fix their own thoughts on the paper, may be singularly puzzled when having to render genuine Swedish text, and will easily "put their foot into it." And yet this is exactly the task that practical life will most frequently impose upon them in making good what they have learnt at school. There is no help for it: so long as their active life is confined to their own country, their whole world of thought is dependent on the mother tongue, and the interchange between it and the foreign idiom is a fact that cannot be eliminated. In business life especially this condition makes itself felt: the head gives his clerk the outlines of a letter in Swedish, or puts the ready-made letter before him calling upon him to translate it. And as it is an important part of my duty to prepare my pupils for this special task, I should fail them by not providing for their training in translating from Swedish. It is the same in our public schools: so long as a creditable translation of the Swedish paper set by the Department is demanded from the candidate for our "Students' examination," the master's duty is clear: he must arrange his teaching accordingly.

In conclusion, I may say that, following the methods I have described, results have been attained far superior to those I ever reached with pupils trained according to the principles of the traditional grammar and translation method, though I have to work with classes often numbering as many as thirty-five and seldom less than twenty, and pupils who have had a somewhat defective previous training. It is evident that my work is *mutatis mutandis* similar to that of a modern-language master in an English school, and therefore the statement of experiences outlined in this and the previous article may prove of some interest and service to teachers who aim at giving vitality to the language lesson.

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A CONTRIBUTION TO ABBREVIATED ARITHMETIC.

By F. C. BOON, B.A.
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Assistant-Master of Kidderminster Grammar School.

IN teaching arithmetic it has often occurred to me that there are possibilities of abbreviation of method in many directions as yet untouched or little noticed in our school teaching. Those I propose to mention are based on the simplest fundamental ideas. Boys readily grasp the shorthand methods and show keenness in adopting them. As their application demands more thoughtfulness than the application of the mere rules ordinarily taught, their educational value is greater. At the same time none of them present difficulties to boys of even small ability.

To Convert Recurring Decimals to Fractions.

Where large numbers will occur in both numerator and denominator in using the ordinary rule, much of the complexity of the subsequent reduction to the lowest terms can usually be avoided by the following method:—

Move the decimal point to the right of the non-recurring figures. We now have a whole number with a decimal composed entirely of a recurring period. Reduce the decimal to a vulgar fraction in the lowest terms. Divide the mixed fraction by the same power of ten as the number of places through which the decimal-point was moved. Where the recurring period represents a familiar fraction, the method is especially useful. Thus, take

$$\cdot\dot{7}6285\dot{7}14.$$

The ordinary method involves the reduction to its lowest terms of $\frac{76285638}{99999900}$.

But, $\cdot\dot{2}85\dot{7}14$ is recognised as $\frac{2}{7}$.

Now the decimal $= \frac{76\cdot\dot{2}85\dot{7}14}{100} = \frac{76\frac{2}{7}}{100}$.

$$= \frac{534}{700} = \frac{267}{350}.$$

Or take $\cdot\dot{2}2025641$.

The ordinary reduction gives $\frac{22025619}{99999900}$ which has to be reduced.

Adopting the above method we get the decimal $= \frac{22\cdot\dot{0}25641}{100}$.

The reduction of $\frac{25641}{999999}$ is not so formidable as of $\frac{22025619}{99999900}$.

Remembering $999999 = 9 \times 3 \times 37 \times 7 \times 11 \times 13$, and seeing that 9 is a factor of 25641, which gives as quotient 2849, and that this $= 7 \times 407$.

$$= 7 \times 11 \times 37.$$

$\frac{25641}{999999}$ is found on cancelling $9 \times 7 \times 11 \times 37$ to be equal to $\frac{1}{3 \times 13}$. $\therefore$ decimal $= \frac{22\frac{1}{39}}{100} = \frac{859}{3900}$.

The value of the method results from the smaller numbers to be dealt with, and from the fact that powers and multiples of 2 and 5 are the only factors introduced by the final division by a power of 10. The presence of any of these in the numerator is at once detected.

In connection with the reduction of recurring decimals it should be more frequently noted and remembered that

$999 = 9 \times 111 = 9 \times 3 \times 37$ 37 is prime
$9999 = 9 \times 1111 = 9 \times 11 \times 101$ 101 is prime
$999999 = 9 \times 3 \times 37 \times 7 \times 11 \times 13$

If these results are forgotten they are easily found. The last 999999 in this manner:

It $= 999 \times 1001 = 9 \times 3 \times 37 \times 1001$.

But 11 is obviously a factor of the original number and, since 37 is prime, of 1001, which is seen to be equal to $11 \times 91 = 11 \times 7 \times 13$.

In cancelling with these denominators 3 and 9 should always be attempted first by adding digits of the numerator. The result may then be tried with 7, 11 and 13 in succession.

Highest Common Factor.

Since we have only to find the Highest *Common* Factor of the expressions to be dealt with, any factor of one which is *not* a factor of the others may be at once eliminated, as it cannot appear in the result. The same may be done where possible with the remainders in the process.

This elimination is always done in algebra, and its application to arithmetical examples would shorten the working considerably. Such factors as 2, 3, 5 and their multiples and powers are at once noted. For example:—

To find H.C.F. of 61655 and 490644.

5 is at once seen to be a factor peculiar to 61655 and 4 (2 twice) and 9 (3 twice) are peculiar to 490644.

The first stage of the working appears as

	61655	490644
	12331	122661
		13629

Dividing 13629 by 12331 the first remainder is found to be 1298; from this 2 may be eliminated giving 649, which is contained in 12331 19 times without remainder, and is therefore the G.C.M. The complete working is

	61655	490644	
19	12331	122661	
	5841	13629	1
		1298	
		649	

Answer, 649.

Compound Interest.

Two methods of fair brevity and compactness are generally taught though the methods commonly in use are cumbrous. The one is by the multiplication of the principal by a constant ratio equal to the amount of £1 in the year at the given rate per cent., thus:—

To find amount of £317 3s. 3d. for 1 year at 3%.

317·1625 is multiplied by 1·03 correct to 5 places of decimals.

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317·1625
9·51488 | × ·03 (multiply by 3 and move figures two places to the right).
326·67738

Answer (to nearest ¼d.) £326 13s. 6¼d.

The second is by taking aliquot parts of 100, which will be found very simple by boys drilled in Practice.

Thus to find the amount of £72 8s. 7d. in 1 year at 3½%.

		72·40916	
2½	¼₀ of 100	1·81023	to divide by 40, divide by 4 and move figures 1 place to the right.
1	¹/₁₀₀ of 100	·72409	
		74·94348	

Answer, £74 18s. 10½d.

A combination of the two methods is often very useful.

Thus to find the amount of £981 3s. 2¼d. for 1 year at 3¼%.

For 3% multiply by ·03. Then ¼% is ¼ of 3%, or ¹/₄₀₀ of 100%.

981·15937
29·43478
2·45289
1013·04704

Answer, £1013 0s. 11¼d.

UNIVERSITY EXTENSION AT OXFORD.

FROM OUR SPECIAL CORRESPONDENT.

WOMEN and foreigners! Those were my first impressions as I waited outside the Examination Hall on the night of Mr. Asquith's inaugural address, and such have they continued. Women and foreigners, personally conducted, invade the halls and chapels of the stately colleges. Women and foreigners pack the bright and open Isis or the cool and shady Cherwell.

An analysis of the list of students proves that the impressions were fairly accurate. It is estimated by the authorities that there were just over a thousand students present during the first half of the course. Of the 1,000 students about 750 were women and 250 were men. Of these men and women 262 came from abroad, 82 from Germany, 50 from America (only about 7 of these from Canada), 30 from Sweden, 18 from France, 18 from Holland, 17 from Denmark, 15 from Switzerland, 13 from Norway, 6 from Austria, 4 from Finland, 3 from Russia, 2 from Hungary, 2 from South Africa, 1 from Belgium, 1 from Italy. These figures are interesting, for, when due allowance is made for distance and population, they gauge fairly accurately the interest each country takes in education. We cannot but be struck with the fact that the Germanic nations lead the way. Contrast with Germany's 82 Sweden's 30, Denmark's 17, the comparatively small contingent from France, the solitary representative from Italy, and the absence of any from Spain. Again, what accounts for Belgium's poor representation? Is it clericalism?

Keeping in mind, therefore, that three-fourths of the students are women, and that one-fourth comes from abroad, let us see what is the chief object of this Summer Meeting. It is, in Mr. Marriott's italicised words, "to bring the Universities to those people who cannot themselves come to the Universities." "The aim of University Extension Lectures is to direct readers to the best books in each subject, and, by encouraging habits and suggesting methods of systematic study, to help students to make the best use of libraries, and to assist them in home-reading and self-culture."

How far does the Summer Meeting attain this object? Or rather, wherein does it succeed and wherein does it fail? On the face of it, I am afraid, the answer must be that it seems to succeed with the women and fails with the men. Why? Is it because men have more facilities for secondary and higher education than women, and women desire to make up the deficiency in this way? Or is it that there is more eagerness and enthusiasm among women for education? Or is it because women are more attracted by the intellectual-picnic character of the course? Whatever may be our answer, we cannot get over the fact that it *attracts* women, if it does not actually *succeed* with them.

But why are there so few men? Why does *The Times* in a leading article write of it with an ill-disguised sneer? Why, too, do many of its own lecturers treat their audience in such an off-hand manner, with a certain suspicion of superiority? Now it cannot be denied that the absence of men, and consequently partial failure of the course, is due to a certain wholly unnecessary superficiality. The programme of lectures includes courses on English History, European History, History of Epic Literature in Europe, Modern Scientific Advance, Social Economics, the Great Oxford Collections, Fine Art and Architecture, the History, Theory and Practice of Education, Theology, English Language, Latin, Greek. Surely there is too great a multiplicity here for a month's work, even though the tastes of a thousand students have to be consulted. Mr. Asquith himself and several of their own lecturers raised a laugh at the expense of such a varied fare.

Again, and I think this is a really important point, there are far too many lecturers to each particular section. It is surely unnecessary to have seventeen different lecturers to treat of the "Making of England" up to 1215! Continuity is impossible in such circumstances and overlapping incessant. Time after time lecturers prefaced their lectures by informing their audience that *they understood* they were supposed to treat of such and such a subject, and by apologising for the magnitude of this subject, the inadequacy of the time, and their own unworthiness. One spoilt a good lecture on Alfred as Warrior by wasting ten minutes upon a general apology for war, the Englishman's indebtedness to it in particular, and his own agreement with Mr. Ruskin's paradoxical attitude towards the same. One foreigner, to my knowledge, rose and left the room.

It was very generally felt that there was an evi-

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dent tendency to refuse to treat the audience seriously, and the feeblest and most infantile pedagogue's jokes were indulged in to raise a laugh. Such flippancy can have but one effect—to misquote Rousseau—"il fait rire les femmes et fuir les hommes."

It seems to me that, unless there are practical difficulties in the way, it would be much better to limit the number of lecturers upon each section to two at most, and to convert these too-general lectures into *classes* such as those of Mr. Keatinge's on Education. At this latter course there were, if not more, at least as many men as women, and an attempt was made at solid work.

If the aim of the extension meeting is the diffusion of culture, it should try to secure its end by encouraging sober, systematic work. Otherwise its culture is mere dilettantism. Mr. Asquith may think that the great need of the hour is the avoidance of eccentricity of every sort, and the cultivation of the "aurea mediocritas," but Canon Gore, in his sermon to the students, is perhaps nearer the truth when he says that the great need of England and her statesmen to-day is "moral seriousness." Education should aim not at the æsthetic ideal of the dilettante, but rather at the moral ideal of the student. It is this "moral seriousness" which has inspired the leaders of that movement for the education of women in England which Miss Maitland of Somerville College so finely surveyed in her lecture. It is this "moral seriousness" which animates the education and life of Germany, Sweden, Wales and Scotland to-day. But in England generally, Canon Gore saw more grasping for riches and luxury and the "organisation of pleasure" than the organisation of education. "The Government *hates* education," a Minister had confessed to him.

Mr. Sadler was but little more optimistic, and saw us striving with the nations for "sea-power," but *not* for "school power." Was our ideal that of "hustling harder than anything else?" An ideal there must be for stable consistent conduct in education as in everything else. Was the ideal of our education the commercial one of "scrunch or be scrunched?"

But to return, it may be fairly considered now, whether the aim of this summer meeting may not be somewhat modified to meet the large increase in the number of highly trained foreigners who come over mainly for the purpose of improving their knowledge of spoken English, but also to benefit by the fruits of English scholarship, and to observe English methods.

There is also another class which may be considered, viz., an increasing number of British secondary teachers, mostly graduates, who, often buried away among uncongenial and lonely surroundings, are glad to come to this beautiful university town for social, intellectual and moral stimulus.

I would here suggest that the authorities in future adopt some means to ascertain the educational attainments of the students at entrance. I should not be surprised to find that a large proportion of them held University or Government certificates, and were competent to follow a more thorough and systematic course than is now provided.

Perhaps one of the greatest benefits that some of the students have obtained has been the privilege of working in the Bodleian, and many, like the writer of this article, will return for another year to the work of teaching (which Mr. Matthew Arnold considered as so irreconcilable with that of a student), strengthened and refreshed by a period of quiet research. But whilst a few have benefited by the library, many have been stimulated by the lectures and social life; and all will be grateful to Mr. and Mrs. Marriott and their colleagues for their untiring efforts on their behalf and their energetic conduct of a movement which is destined to live and do much good work.

MODERN-LANGUAGE TEACHING IN PRUSSIA.

By A. HARGREAVES.
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THE time-tables and methods and objects of teaching to be observed in the higher schools in Prussia have now been published,[1] and it may be of interest to English schoolmasters to consider a few extracts from them. These time-tables and instructions supersede the old ones published in 1893, and have of course been to a certain extent influenced by the Emperor's edict of November 26th, 1900. This is especially noticeable in the great weight laid upon conversation in modern-language teaching and upon intuitive methods and experiment for natural sciences. First of all there are the time-tables. Here is the time-table for "Oberrealschulen":—

	VI.	V.	IV.	Lower III.	Upper III.	Lower II.	Upper II.	Lower I.	Upper I.	Total.
Religion	3	2	2	2	2	2	2	2	2	19
German and Historical Stories ...	5	4	4	3	3	3	4	4	4	34
French	6	6	6	6	6	5	4	4	4	47
English				5	4	4	4	4	4	25
History			3	2	2	2	3	3	3	18
Geography	2	2	2	2	2	1	1	1	1	14
Mathematics and Arithmetic ...	5	5	6	6	5	5	5	5	5	47
Natural Sciences	2	2	2	2	4	6	6	6	6	36
Writing	2	2	2							6
Freehand Drawing		2	2	2	2	2	2	2	2	16
TOTAL	25	25	29	30	30	30	31	31	31	262

[1] *Zeitschrift für Lateinlose Schulen*, August, 1901.

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This time-table is subject to small changes when permitted by the inspectors.

The absence of classics allows, of course, more time to be devoted to modern languages and sciences than is devoted to these subjects in a "gymnasium." It will be of most interest to consider the teaching of French and to compare it with the French lessons in an English school.

We see that for nine years there is an average of between five and six hours weekly devoted to this subject, and the French in an "Oberrealschule" corresponds to the "Latin" in a gymnasium. According to the code, the following is the object to be aimed at:—

"Ability to read the most important French works of the last three centuries; insight into the grammatical system of the language; some knowledge of the most important periods in the literary and social history of the French people; exercises in writing and speaking."

A comprehensive enough programme, and one which explains the large amount of time devoted to French. Whether the objects are realised is quite another matter. It is difficult to see how a teacher who, for instance, has never been abroad is to give the scholar the necessary practice in conversation. The training which the average student gets at the university is certainly not sufficient.

How the object is to be attained is conveyed in the following detailed instructions for each class:—

VI. 6 *hours weekly*.—Conjugation of the auxiliary verbs *avoir* and *être*, as well as of the regular verbs. Elementary accidence. Substantive, adjective, pronouns and numbers.

V. 6 *hours weekly*.—As in the 6th class, but more detailed.

IV. 6 *hours weekly*.—Repetition and expansion of the accidence, with special reference to the pronouns in connection with interrogative and negative forms of the verbs. The irregular verbs in groups corresponding to their forms.

Lower IIIrd. 6 *hours weekly*.—Use of *avoir* and *être* in the compound tenses. Order of the words in a sentence, cases governed by verbs, use of tenses and moods, especially the subjunctive.

Upper IIIrd. 6 *hours weekly*.—Chief rules of the syntax: Infinitive, participles, gerund, definite article and substantive.

Lower IInd. 5 *hours weekly*.—Chief rules of the syntax: Adjective, adverb, pronoun, comparative sentences and negations. Repetition of the whole of the accidence and of the chief syntactical rules.

Upper IInd—Upper Ist. 4 *hours weekly*.—General repetition; more intimate knowledge of the grammar, with prominence to the demands of logical clearness.

The remarks as to the methods next claim our attention. They are in force for both French and English.

Pronunciation.—The acquisition and preservation of a good pronunciation has to be carefully attended to throughout the entire course. A good pronunciation having been obtained at the beginning by means of special short lessons, it must afterwards be regularly controlled, and then the sureness, fluency and accent stress regularly developed. In certain points, where the pronunciation really varies, the teachers in the same school must adopt the same pronunciation. The necessary practice in the development of the organs of speech must also be used for perfecting the pronunciation of German.

In many schools the first lessons in pronunciation are given by means of "sound tables." Their use is, however, by others condemned, but in general they seem to serve a very useful purpose.

Conversation.—Exercises in speaking must be begun from the very commencement of the course, must be continued till the finish, and in no lesson must they be completely left out. They must, of course, be graduated both with regard to the contents and to the fluency of delivery. The form must be constantly developed, but simple dialogue must always hold the most prominent place. The oral exercises which are correlated with the reading must be supplemented by others dealing with the events and relations of daily life. Tasteful pictures are recommended as an assistance, and maps and artistic pictures may also be used. Great care must be exercised in all these exercises that they do not develop into a mere mechanical questioning and answering, and that too much stress is not laid on the momentary state of affairs abroad, to the neglect of more important points which have a lasting relation to Germany.

The difficulty in this plan is that throughout the whole course simple dialogue must predominate. When the scholars have had about six years of this, it is difficult to keep their attention riveted. In such cases I have found that the relation of short stories, to be repeated at first by the best, afterwards by the most backward of the scholars, is a pleasant change. Again, the before-mentioned objection to teachers who themselves have only a moderate practical acquaintance with the language holds good. Imagine the lot of such a teacher in those states bordering on Alsace and Lorraine, where often a large percentage of their scholars speak French fluently. It is, to say the least, painful to know that certain scholars are aware of the blunders the master is making, and even the best of us make some at times.

Stock of Words and Phrases.—A quantity of words will be learned in the oral exercises. These must not be forgotten, and in addition a stock of suitable, useful phrases must be learned and correlated with the oral exercises. The words and phrases may both be gathered from the reading-books; vocabularies arranged according to the subjects are useful. When words are being learnt, opportunities often arise for illustrating the history of the language. These opportunities can be used according to the knowledge of the class.

Reading Matter.—This is the most important branch in the teaching of French, and must consist of valuable matter in a good form at least during the second half of the course. In choosing reading-books one must chiefly take into account those works dealing with the social and national

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life of the people; in "Oberrealschulen" technical and scientific works must also be read. The matter in many editions of school books must be carefully examined, and care must also be taken that it does not become too one-sided in any year. Although oral exercises are to be taken in conjunction with the reading-books, yet it must not be forgotten that they only play a secondary *rôle*. This is especially the case in the higher classes. Fluent, lively reading, with a good accent, must be insisted on in all classes; the results to be obtained varying, of course, with the class. With this object the learning and recitation of suitable poems and pieces of prose will be very useful. Attempts to describe the text in the foreign language itself, instead of translating into good German, are only so far permissible as the ability of the teacher and the development of the scholar ensure a complete mastery of the contents—both of the form and thought.

The chief point here is to avoid using reading books for both French and English simultaneously which contain similar matter. This would make the reading too one-sided and deaden the scholar's interest.

GRAMMAR, &c.—The grammar must occupy a secondary place to the reading, but not so that a systematic arrangement and division of the "*pensa*" for each class cannot be carried out. However simple it may be, the scholar must always have system in front of him. Correlation with the other languages which the scholar learns must never be neglected. The general order of accidence and syntax must be adhered to, but not so that it would be impossible to deal early with important syntactical rules, and to leave less important ones to be taken later. The principal object is "Complete mastery of the most usual rules, while of many others it is sufficient to mention and explain them during the reading." How far the grammar may be treated historically will depend upon each school. But in no case can this take the place of a complete mastery over the rules. Repetition and confirmation are always the most necessary points. Grammars written in the foreign language are not allowed.

Synonymous words, metre, style, &c., are to be treated according to practical necessity; the teaching on this point is to be illustrated by concrete examples at suitable opportunities.

WRITTEN EXERCISES.—Although oral exercises are more important, yet written ones must not be altogether neglected. As a rule, in the middle and lower classes one exercise a week can be given, in the upper classes they may be less frequent. These exercises must not be confined to translating into the foreign language. Paraphrases and imitations of set examples must be given, even in the earlier stages, in order to prepare for the larger free exercises in the upper classes. Written translations into the foreign language can for a time be abandoned in favour of free exercises, which are to prepare the scholars for a greater freedom of expression in the foreign language, thus getting rid of a word-for-word translation, but they will hardly be able to be dispensed with altogether. Essays in the upper classes are not to be confined to general historical subjects.

THE LANGUAGE.—The language to be used in teaching will depend on the qualifications of the teacher. When they have a thorough knowledge of it they may use the foreign language, but for difficult and thorough explanations it will always be necessary to return to the mother language.

It is this last paragraph to which most exception is taken. Some teachers are in favour of using only the foreign language, others are against its use to any great extent. These contend that, although it may be of advantage to the most forward scholars, it is a drawback to the backward ones. Perhaps a few words from "Münch" may be of value on this point. He points out that the mother language must be used when anything new is explained and to be learned, also for the more thorough explanations of the reading matter. A teacher only thinks and exercises with the scholars in the class; he does not live and experience the events of life with them. This would be the natural way of learning to speak, and therefore one must touch upon the commonest events of life—coming and going, opening and shutting, &c.—in teaching the scholars how to speak the language.

These, then, are the chief instructions as to objects and methods to be observed in Prussia so far as English and French are concerned. It may be pointed out that in all branches the correct use of German is to be insisted on. It is to be regarded as the chief branch of work. This can, however, easily lead to abuse. I was once present at a French lesson where the insistence on the German had a most disturbing effect on the whole lesson. No sooner did the class get started than they were interrupted to allow the teacher to explain some delicate difference of meaning in the German. Of course, German scholars make more grammatical mistakes in speaking their native language than English boys do; but still, there are many teachers who say, and perhaps rightly, "It is French (or English) I am teaching, and not German."

Concerning the other subjects, there is much that is interesting in the new schemes, but space forbids their being touched upon in this article.

MANY of the schools are drawing away from the older methods of teaching modern languages. Some still cling to the same method of presentation as is pursued with the classics, but they are the exception rather than the rule. It may be said that the gymnasium teachers favour the grammatical method, while the real-school teachers advocate the natural method. The results obtained in English in the gymnasia are not usually as good as those reached in the Real-school and Real-gymnasia. Still, some of the best teaching of English that I was able to witness in all my visits was in the gymnasia. French is taught as a spoken language, and taught well in all classes of schools. The real-schools usually give instruction of the most vigorous sort, which, viewed from the standpoint of practical utility, is most effective. This utilitarian tendency which the newer methods are believed to engender and foster is viewed with great disfavour by many gymnasial instructors.—Dr. F. E. Bolton in "The Secondary School System of Germany." (Edward Arnold.)

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SCIENCE TEACHING IN IRISH INTERMEDIATE SCHOOLS.

ATTENTION was directed to the new scheme of the Board of Irish Intermediate Education in an article in our July number, where it was stated that the Board had passed a resolution adopting the programme in science and drawing set forth in the "Suggested Syllabus" prepared for secondary schools by the Department of Agriculture and Technical Instruction for Ireland. For the future the subjects of natural philosophy, chemistry and drawing, in the programme of the Intermediate Education Board for Ireland will be replaced by one subject, viz., "Experimental Science and Drawing;" and after the present year, until a year's notice shall have been given, no examinations in this subject will be held, but the inspection (and where necessary the examination) of the Department of Agriculture and Technical Instruction will be accepted by the Intermediate Board.

It should be remembered that from April 1st of this year the administration of the grant for science and art in Ireland was transferred to the Department of Agriculture and Technical Instruction. This grant was formerly administered from South Kensington and must not be confused with the funds at the disposal of the Irish Department for Technical Instruction, nor with the grant in aid of technical instruction, which is available when local authorities raise rates under the Technical Instruction Act. The new Department in taking over the science and art grant has decided to alter in many important respects the regulations for the administration of the grants and for the guidance of the science teaching in secondary schools in Ireland.

Fortunately no detailed programmes of study which all schools must follow have been issued. A variety of arrangements is to be encouraged, and opportunities are to be afforded to each school to stamp its individuality on the character of the instruction. Considerable latitude in the modification of details will be permitted, though practical work will be insisted upon, and all schools must take up physics before chemistry and adhere to the general character of the exceilent syllabus which has been suggested.

At first this scheme will be regarded as tentative, and the work for the first year, at least, will be regarded as an experiment. The work will be tested by inspection, without notice usually, but towards the close of the school year the inspector will give notice of his visit of final inspection for that year. At such visits, but especially on the visit of final inspection, it will be within the discretion of the inspector to test any or all of the classes by practical exercises in the laboratory, or by *viva voce* examination of classes or individuals, or by written examinations, or by a combination of these methods.

The question of the qualification of teachers is, very properly, receiving great attention. To assist the supply of teachers trained in experimental work the Department arranged, during the recent summer vacation, a number of holiday courses in practical physics. Large numbers of schoolmasters and schoolmistresses from Irish secondary schools were, at Dublin, Cork, Belfast, and other centres, introduced to the methods of teaching practical physics, which have, during the last ten or twelve years, attained great popularity and importance in similar schools in Great Britain.

The "Suggested Syllabus" already referred to bears a great likeness to the courses of physics and chemistry common in the organised Schools of Science in connection with the English Board of Education. The work of the first year may be briefly summarised as follows:—Measurements of length, area and volume; measurement of mass and density; measurement of time; simple experiments with the lever; the barometer and Boyle's law; simple experiments on heat, such as the determination of co-efficients of expansion, melting points, boiling points, specific heats, latent heats, rates of cooling, and so on.

But it is not the actual subjects studied to which the greatest importance is attached, but the method of study itself, and the Department has supplied the teachers with a sensible, helpful homily on the objects of the instruction. This "prefatory note," as it is called in the official document, so clearly indicates the intention of the Department in their new undertaking that we cannot do better than reprint an abridgment of it:

The committing of facts to memory, however important or useful, is not Science teaching. The object in view is the introduction of the scientific method of Science teaching as a means of mental discipline; and it is because the methods and spirit of the teaching cannot be measured by the ordinary form of written examination that the annual written tests have been abandoned in favour of inspection.

The principles underlying the scientific method are (1) careful and accurate collection of facts, (2) observation of the interrelation and sequence of facts, (3) construction and testing of hypotheses to account for facts; and it is possible, even in the simplest exercises, to have due regard to these principles. To the scientific method, the mere *telling*, or *learning*, of facts is therefore opposed. The work is to be practical, and by this is meant the working out of the exercises by the pupils themselves. The business of the teacher is to shape his course of instruction by exercises chosen on some definite plan; to instruct his pupils how to measure and weigh accurately, and, in general, how to collect the results of their observations; and to assist them in arriving at correct conclusions. Results should, as far as possible, be tested in more ways than one; and the pupils should gradually gather confidence in their own observations, so that, whether hopeful or not as to the correctness of their conclusions, they should have complete confidence in the accuracy of their facts.

As far as possible, the "research" method should be adopted even in the earliest exercises; but the teacher will probably find that at one time the "research" method, and at another the method of "verification" will best serve the interests he has at heart, and carry along his work without undue loss of time. Instructions as to the carrying out of exercises will necessarily *precede* the actual measurements, weighings, and so on; but the drawing of conclusions, the driving home, so to say, of the meaning of the facts, will *follow* laboratory practice.

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To this end the class should be "kept together." Much of the value of this kind of teaching is lost in the case of young pupils if individuals are allowed to "go on."

Pupils may be allowed to work in pairs, but not in groups of three or four. Careful consideration of the exercises, with a view to such modification of details as will reduce the duplication of sets of apparatus, will therefore be demanded of the teacher. The apparatus used should be as simple and inexpensive as possible.

A word about the exercises themselves may be useful. In the measurements of length, area, and volume, the attention of the pupil should not be confined to small objects. The metre stick, the foot rule, the yard stick, a tape, and, where available, a surveyor's chain, should all be used; the circumference of a small coin, of a circle of large dimensions; the area of an envelope, of a pane of glass, of the surface of the working bench or of the floor; the volumes of flasks and of vessels of large size, such as pails, barrels, and even cisterns, should all be measured in English and metric units. In a word, the scale of the exercises should be largely varied, and the pupils should learn through experience the limits of accuracy imposed and the consequent reduction of arithmetical labour. No calculation should be carried further than the number of decimals in the least accurate factor of it. Where the experimental error is clearly not less than 1 per cent. it is at least a waste of time to produce an answer containing seven or eight decimal places.

The record of the exercises is only less important than the exercises themselves. A laboratory book of uniform size, and with a fair proportion of pages of squared paper, should be in the possession of every pupil. The method of performing an exercise should be described in a few sentences, the apparatus should be neatly sketched, and the results of observations entered in ink (arithmetical results tabulated in ink) at the time of working the exercise. The carrying of the results of weighing or of measurement and so on "in the head," or the writing of results on scraps of paper, not only lead to loss and consequent waste of time, but will also counteract those habits of neatness and accuracy which are regarded as essential characteristics of the work.

It may occasionally be found advisable (owing to the nature of the experiment or to the character of the apparatus required) to perform an experiment in the class-room and to omit it from the laboratory course. Such cases must be exceptional, and they must be clearly separated from what is understood to be the work of the pupils. All exercises should be dated. Under no circumstances should measurements or calculations, or work of a similar character, be obtained from any source but the pupil's observations—not necessarily unaided, but largely his own. A good teacher will not overlook the opportunities which arise for emphasising the importance of good spelling, grammatical correctness, and careful selection of words, phrases, and sentences; but all these will be subsidiary to the main object—the discipline to be obtained from practice in physical methods.

The use of squared paper, especially for the "curving" of the relation between two varying quantities, is of much importance. Squared paper should not only be used in connection with areas and, say, the verification of certain of Euclid's propositions; but the daily readings of the thermometer and of the barometer should be curved (the relation of the curves to the character of the weather may be brought out), and such observed results as the relation of the circumference to the diameter of a circle; of the area to the square of the diameter; of the volume to the weight of solids of the same substance, but of different dimensions; of the pressure to the volume of a gas, the temperature being constant; of the volume to the temperature, the pressure being constant; of the pressure to the boiling temperature of water; of the length of a pendulum to the square of the time of one vibration, and so on; should all be plotted and the curve drawn, and exercises given to bring out the value of the curve as an important aid to the increase of knowledge.

Not less frequently than the close of each series of lessons, which aims at bringing out a general principle, should the results be summarised and the conclusions indicated. At the same time it should be clearly set out how far the problem in hand has been solved, and how far the results or conclusions are inadequate.

During the coming school year nearly all schools will take up these subjects in physics prescribed as the first year's work of a continuous course of science. The second year of the course is to be given to introductory chemistry, the exact starting point of which will depend upon the amount of work got through in the first year. The work of the second year is, in any case, to be devoted mainly to chemistry, when, after exercises on evaporation, solution, distillation, crystallisation and filtration, the following subjects are to engage the pupil's attention:—The action of heat on iron, phosphorus and common laboratory substances; the action of oil of vitriol on common salt and nitre; the action of water on acids and chalk; the action of heat on chalk; the action of acids on metals. No attempt is to be made to teach the atomic theory, to write formulæ, or to give equations for reactions. The course is, in fact, intended to be entirely experimental.

The teachers of Ireland are entering into the new scheme with the greatest enthusiasm. The number of applications for the vacation courses this summer was considerably in excess of the available accommodation, and those who attended went about the work with the utmost earnestness. New laboratories are being arranged all over Ireland, and it cannot be long before the advantages accruing from a sensible system of science instruction will be enjoyed by pupils in Irish schools.

ENGLISH TEACHING IN AMERICAN SCHOOLS.

IN 1892, as readers of THE SCHOOL WORLD are doubtless aware, a Committee of Ten was appointed to consider and report on the methods of teaching in vogue in the schools of the United States. The Committee of Ten co-opted several "conferences," one of which dealt with the question of English teaching. The appearance of Miss Lewis's book,[1] following as it does many others inspired by the findings of this Conference, seems a fitting time to draw public attention in England to the contrast between our own methods of teaching the mother-tongue and those that obtain across the Atlantic. It is a somewhat invidious task to decry the existing state of things in one's own country, but the chaos that is the most

[1] Inductive Lessons in Rhetoric. By Frances W. Lewis. viii.+308 pp. (Isbister & Co., Ltd.) 3s. 6d.

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striking characteristic of English secondary education cannot be increased by the voice of one crying in the wilderness, especially when his subject happens to be the one least likely, as it seems, to obtain immediate recognition.

For what is the position that English subjects —that is to say, Literature, Composition and Grammar—occupy in our secondary schools? For what purposes is English taught in them? How many headmasters could be found whose time-tables are not direct evidence of the lack of appreciation of the disciplinary powers of the mother tongue? We have advanced but little in this matter during the last three centuries. Francis Bacon long ago rendered a grudging tribute to the ancillary qualifications of English in relation to Latin and Greek, and the subordinate position it still occupies in schools is a fair measure of the estimation in which it is held to-day. According to the Committee of Ten, there are two main objects of the teaching of English subjects:—(1) to enable the pupil to understand the expressed thought of others and to give expression to his own thoughts; (2) to cultivate a taste for reading, to give the pupil some acquaintance with good literature and to furnish him with the means of extending that acquaintance. But this is in America! The objects of teaching English here are not easy to discover, but an important one would appear to be the training of a boy to translate a piece of Latin prose into his own language —essentially the task of a mature mind. "To cultivate a taste for reading, to give the pupil some acquaintance with good literature." The editor of one of the most popular of boys' magazines told the present writer a short time ago that, wishing to discover the "taste" of the public-school boy, he sent a member of his staff to one of the oldest and largest of our public schools; the first thing he noticed on his arrival was an aristocratic-looking youth eagerly devouring the contents of—*Comic Cuts!* "To give expression to his own thoughts." How many boys in England can give grammatical expression to their thoughts? Is it not a fact that the English Essay paper in the scholarship examinations of the two Universities is generally a lamentable failure? Can it be wondered at when the average teacher's conception of the value of English composition is inseparably connected with the feeling of relief engendered by the consciousness that here at any rate he cannot be expected to take an active part in the direction of his pupils' studies? This is not the view that prevails in the schools of the United States. There the instruction in the principles of rhetoric and composition is systematised to a degree not even dreamed of in this country—at least in boys' schools; experience leads one to believe that their sisters are somewhat more fortunate.

Having glanced at the shortcomings of our own mediæval educational system, let us see what is being done elsewhere. The English "Conference" claimed as much time for the teaching of English as Latin; it was of the opinion that the study of English (which, be it remembered, does not include history and geography) should be pursued in the High School for five hours a week during the entire course of four years. That is to say, a boy leaving school at the end of his eighteenth year would have had 800 lessons in literature and composition, including a few in rhetoric and grammar. We may take it for granted that such a course would make it easy for a boy to have some understanding of, say, Tennyson's "Ode on the Death of the Duke of Wellington," and to appreciate its marvellous harmony. The Conference rightly laid stress on the value of English grammar as a means of training in thought, but decided that it is not necessary for the writing and speaking of good English. This is, of course, to a certain extent true; at the same time it seems a pity that more use is not made of grammar. The Conference, indeed, advocated the teaching of Latin or German as a valuable auxiliary in the development of the mental faculties—mainly because of the large number of inflexions. To the present writer it is a matter of regret that Old English—itself a synthetic language—is not substituted for Latin in the earlier stages of a boy's life at school. Another important recommendation of the English Conference was to the effect that every piece of written work—in physics and mathematics as well as in purely literary subjects such as history—should be made part of the student's English education. The idea occurs again and again in their report.

We have alluded to the careful systematisation of the methods of teaching English composition. Some idea of the thoroughness with which this is done may be gained by a perusal of Miss Lewis's book, which exemplifies the recommendation of the Conference. "Though it is clear that the power to write a language can be obtained only by unremitting practice, yet in the opinion of the Conference such practice may properly be accompanied and illustrated by a course in elementary rhetoric. This course should include not only the principles of clearness, force and good taste, but the principles of the arrangement of clauses in the sentence and of sentences in the paragraph. The teacher should bear in mind that any body of written English of whatever length is an organic unit with principles that apply as well to the arrangement of the minor elements as to the grouping of the larger divisions of essay or book."

Finally, it may be of interest to reproduce the main features of the course in English determined upon by the Conference:—

EIGHT-YEARS' COURSE IN THE ELEMENTARY GRADES.

1st and 2nd years. Ages 6-8.

Pupils to reproduce orally stories told them; to invent stories and describe objects.

3rd to 6th years. Ages 9-12.

Supplementary reading begun—and continued through all the grades. Composition begun—writing narratives and descriptions. Oral and written exercises on forms and the sentence.

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7th year. Ages 13-14.
From this grade no reader to be used.
8th year.
Grammar. 3 periods a week.

FOUR-YEARS' COURSE IN SECONDARY SCHOOLS.

9th year. Ages 14-15.
Literature. 3 periods a week.
Composition. 2 ,, ,,
10th year. Ages 15-16.
As for 9th year.
11th year. Ages 16-17.
Literature. 3 periods a week.
Composition. 1 ,, ,,
Rhetoric. 1 ,, ,,
12th year. Ages 17-18.
Literature. 3 periods a week.
Composition. 1 ,, ,,
Grammar (historical). 1 period a week.

TRAINING FOR TRADE.[1]

FEW thinking persons will refuse assent to the general proposition that it is time English secondary education was organised and duly co-ordinated with those grades of education above and below it. Bearing in mind, however, that the majority of people do not fall within this category, it is well that writers of Mr. Fabian Ware's experience should now and then recapitulate the reasons which have led true educationists to devote their best energies to the task of persuading uninterested Governments to legislate in this direction. There is little that is new to the student of education in the volume before us, but it presents in a clear and striking manner the vivid contrast between the systematised national provision for education in Germany and France with the haphazard and chaotic congeries of schools—often individually excellent, it is true—which is all England has in the way of graduated institutions for the training of her sons and daughters.

Why is Great Britain being beaten in the markets of the world? is a question that is being asked on all sides. Mr. Ware attempts to answer it by explaining how the German, French and American boys are trained to take their places in the factories and warehouses of their respective countries. Speaking broadly, it is here maintained that the fundamental factor in the success of the education of our trade rivals is the generous provision of secondary education which they have built up. Following in the steps of Matthew Arnold, Mr. Ware pleads earnestly and, we think convincingly, for the organisation of secondary education.

Like most enthusiasts, he is sometimes carried away by his earnestness. It is at least debatable whether "it may be truly said that the development of the system of secondary schools marks at present with approximate accuracy the exact rank that a nation holds in civilisation." But if Mr. Ware succeeds in hastening the day when the broad generous education he describes is within the reach of all boys and girls likely to benefit by it, we are prepared to forgive him a few extravagances.

A serious weakness of English schemes of technical education is exposed. English men of science have pointed out repeatedly that Germany owes most of her success as a manufacturing nation to the excellence of her higher technical schools. The universal dissemination of a highly attenuated form of technical instruction such as our county councils have familiarised us with will do little to equip English workmen to compete on equal terms with German and American contemporaries. One or two institutions similar to the Royal Technical School at Charlottenburg would do more real good in this country than all the evening classes and short coures of lectures put together. Half-a-dozen thoroughly trained directors of labour, conversant with recent advances in technical science, would have more influence on English manufactures than an army of ill-educated workmen with a smattering of the elements of natural knowledge. With this view Mr. Ware seems to be in agreement, but we think that on the general question of what is comprised by technical education he is in error.

Like many other writers on education, Mr. Ware is prejudiced against the work which has been done by the old Science and Art Department. There is something contemptuous in his references to the "Schools of Science" and "Higher Grade Schools." To speak of the instruction in elementary science which is the distinguishing characteristic of the "School of Science" curriculum as technical education is to lose sight of the legitimate part which science must take in all well-balanced systems of secondary education. In the past there may have been an undue importance given to science in these schools, but such preponderance is a thing of the past. This notwithstanding, Mr. Ware rightly insists that no technical education which is not firmly founded upon a broad basis of general secondary education can accomplish what is expected of it. But in this general preliminary education science must take an honoured place.

Many other important questions are touched upon. Things will not be right in our secondary schools until all our schoolmasters and schoolmistresses are satisfactorily trained. More importance must be attached to the opinions of educational experts, says Mr. Ware, and we agree, provided that great care is taken in the choice of the experts. In a free country, where all talk, a confusion is apt to arise between the man who has really learnt his business and the one who has a great deal to say about it. "They think they shall be heard for their much speaking" is as true in the educational world as it is in other walks of life.

1 "Educational Foundations of Trade and Industry." By Fabian Ware. xi.+300 pp. (Harper & Brothers.) 3s. 6d.

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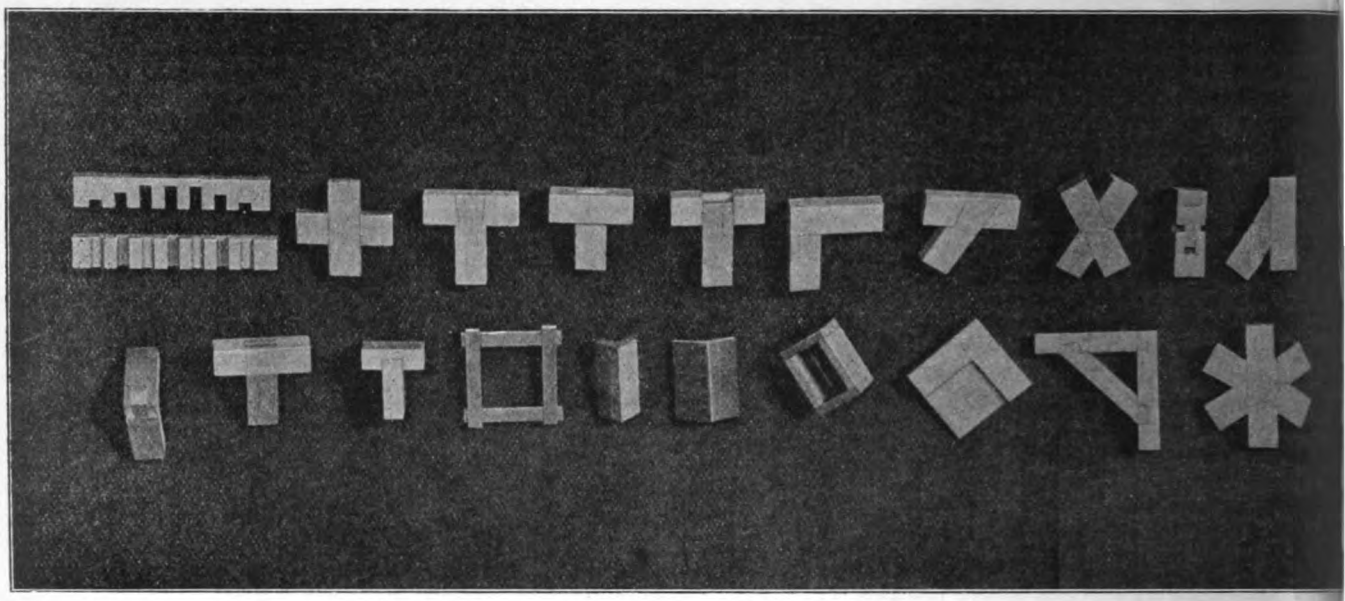

PLATE I.—ABSTRACT EXERCISE METHOD.

The objects are arranged roughly, in order of difficulty.

EDUCATIONAL SLOYD IN THEORY AND IN PRACTICE.[1]

By GEORGE S. HODSON, M.A.(Cantab.).

"WHAT is Sloyd?" asks the average person. He is met with a definition, more or less amplified, more or less correct; he is shown, perchance, a number of models which are referred to as "Sloyd models," and he hears, probably, a good deal about the "Sloyd knife" which is placed before him. Such is the experience of the majority of inquirers. And the result? Sloyd is "doing something with a knife to a bit of unseasoned wood"—this from the intelligent but uninterested Briton. Sloyd is "making things out of wood with a knife and some sand-paper"—from another, rather more interested. Sloyd "consists of a certain set of models" is the impression carried away by a third and the representative of the large majority, some of whom are under the belief that the set is made entirely with the knife, while others are doubtful on the point. The reasons for these widespread misconceptions of Sloyd need not concern us. Let me try rather to present, so far as may be possible within the space at my disposal, a just view of our subject, and such a knowledge of the essential features of the system as would enable one to say, unhesitatingly, whether any particular set of models is or is not "a Sloyd set."

It should be clearly understood at the outset that in Sweden, the country of its birth, Educational Sloyd is but the youngest of a family of four brother Sloyds, descendants of a patronymic *slöjd*, the primitive significance of which is merely "skill" (of hand), "manual dexterity." As this skill was turned by the peasantry to the wise employment of spare time at home, to the production of useful articles for sale, or to the working of objects of ornament, so was it differentiated respectively as "Home," "House" and "Art" Sloyd, the three elder brothers of our "Educational" Sloyd, whose name indicates its mission as being the utilisation of manual skill in the service of education. We in Britain know only this youngest brother, and it is generally referred to under the family name alone, so that, in following the common usage for the sake of brevity, I would be understood, in speaking of "Sloyd," to mean "Educational Sloyd." Further, it will be readily seen that manual skill may thus find outlet in many different materials, but as wood has been found to be the most widely suitable for educational purposes, I will deal only with Wood Sloyd (and with that branch of it known as Sloyd Carpentry), though work in metal or cardboard or other material would serve the purpose of exemplifying the fundamental principles of the system almost equally well, these principles being the same whatever the material.

Now these principles—and Sloyd is in reality but "a bundle of principles"—may probably be best understood if, instead of beginning with the usual definition and explaining it, we put ourselves in the place of a sloyder in the act of devising or building up a system of carpentry which shall be of service in the education of the young, that is, by synthesising our system instead of analysing it. Such an one would naturally begin by placing clearly before himself the objects or *aims* he has in view; he would then seek a *working basis* for his system and determine his *method of procedure*. Finally would come the choice of the *principles* which should guide him in the attainment of his ends.

The Aims of Sloyd.

Let us, then, first see what are the sloyder's *aims*. It will not be possible, within the scope of this short summary, to deal with all of these, but by choosing the more prominent of them we may see our subject in very fair perspective. They may be enumerated as follows:—

(1) To inspire respect for honest, bodily labour.

(2) To encourage independence and self-reliance.

(3) To accustom to attention, perseverance, patience and exactness.

(4) To develop the sense of touch, and to give general dexterity of hand.

(5) To train the eye to see accurately, and to develop the sense of beauty in form.

[1] Abstracted by the author from "Educational Sloyd in Theory and Practice." (Geo. Philip & Son.) The illustrations are from the same source.

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The Working Basis.

These, then, are the ends we wish to attain, and having set them clearly before ourselves let us decide upon our *working basis.* We have the choice of three. In the first place, there are a number of *tools*; in the second, certain operations which can be performed upon the material with these, termed *exercises*; in the third, objects which can be made by series of such operations and called *models.* Since the ends we have in view are educational, our choice must be in accord with the great educational maxim which says that instruction should proceed "from the easier to the more difficult, and from the simple to the complex." Experience shows that this can best be done by taking *exercises* as a basis, and at Näas, near Gothenburg, at the Sloyd Teachers' Training School, founded by the generosity of a Swedish gentleman, Herr Abrahamson, and presided over by Herr Otto Salomon, the originator of the movement, the work is based upon a number of such exercises. The list contains eighty-eight, and these are graduated as carefully as possible in ascending order of difficulty and in conformity with the principle "from simple to complex" (*i.e.*, according as they consist of a single operation or a definite and orderly series of such simple operations), and have been found to form an excellent working basis. It will be understood, of course, that the number and choice of exercises may vary to any extent.

Method of Procedure.

We come next to our method of procedure, and again we find that we have a choice of three open to us. There is, first, the *abstract exercise* method, in which the exercises are taken and taught separately, or in simple combinations, as so many isolated or "abstract" exercises. The accompanying Plate I. shows such a series, consisting mainly of complex exercises known as "joints." Then we have the *preparatory exercise* method. In this the learner first works one or more exercises by way of practice, and is then put on to a model which contains these same exercises embodied in it. A visit to the Education Exhibition held at South Kensington in January, 1900, showed that this is the method favoured almost universally by the more important school boards of the country, and sets exemplifying it are probably to be seen in most of our larger towns. Finally, there is the plan of embodying the exercises from the commencement in models, choosing and arranging these so that the needful dexterity in performing each new exercise has been acquired in the working of the models leading up to it. This may be termed the *model* method and is shown in Plate II., which, it will be seen, is a Sloyd set of models. Now why does the sloyder discard the abstract and preparatory exercise methods in favour of this one? We again search our educational precepts and find—*proceed from the concrete to the abstract.* Here, then, is one reason: for of the two it is the model which embodies the concrete idea, the exercise is merely an abstraction, and in doing abstract and preparatory exercises we are reversing the educational principle. Another and a very strong reason is based upon the sloyder's desire to inculcate in the child the habit of attention. Now the true stimulus of attention is interest, and the one varies directly as the other. The end which the *child* has in view is the completing of an object that is to be of use to himself or to a relative or friend, and anything that makes more distant the attainment of this end, in the shape of preparatory exercises or otherwise, to that extent diminishes the amount of interest, and this reacts detrimentally upon the process of the formation of the habit of continued attention. Yet another reason for discarding abstract and preparatory exercises is to be found in the attempt to inculcate exactness, both in thinking and in manipulation. For it is obvious that a child, when working at a mere abstraction and upon a piece of wood which he knows will be thrown away sooner or later, will, as a rule, be neither so cautious in proceeding nor work so carefully as when he knows that a single thoughtless or careless manipulation will spoil the model which, to him, is the desired end. Finally, should he so spoil his work, which supplies the stronger incentive to patience and perseverance—two more of the sloyder's aims—a useful and eagerly-desired model, or an object which, when finished, is neither attractive, as a rule, nor useful? Obviously the model. The sloyder, therefore, decides to embody his exercises in models throughout, and will have nothing to do with either abstract exercises alone or preparatory exercises.

Principles.

The final step remains; it is to design a set of models in the working of which the educational results desired may be attained. This involves two distinct processes running side by side, viz:—

(*a*) The choice of suitable models.

(*b*) The arrangement of the models.

It is obvious that this choice and arrangement of models must be carried out under definite rules, and that these guiding rules, or *principles*, will be determined by the educational nature of the results they are to be instrumental in obtaining. To do justice to these within the limits of an article so short as this must necessarily be an impossibility, but I may, at any rate, hope to outline them and the reason for their choice to such an extent as to enable some to steer clear of the gross misconceptions of Sloyd with which one too often meets.

We will consider first the more important of the principles governing the *choice* of models. The first we will take may be thus stated:—*The models should be serviceable, and their uses must be such as a child will readily appreciate.* It will be seen that this principle carried into operation effectually prevents any one set of models from being able to lay claim to any such title as "*the* Sloyd set," or any one model to the designation "*a* Sloyd model," excepting in a local or relative sense. For objects which may be familiar and useful to any one child will be determined by that child's surroundings. The model, therefore, will vary not only with the country but even with the districts of any one country in which they may be designed for use. And why should the sloyder insist upon this principle of utility? Again, interest and its consequence, the habit of attention. A child working at an object which will be of no use to anyone when completed (see Plate I.), and one making something useful "for father" or "for mother"—which of the two will throw himself into the work the more completely? And which is the more likely to imbibe "respect for honest bodily labour" and the skilled work of the artisan?

Our second principle of choice follows, as a corollary, from the first, viz.:—*That each model must be a complete object in itself and not merely a part of something.* For if a model be but a part, only, of a whole it cannot be "serviceable," since it lacks the complement without which it cannot be used for the purpose for which it was designed.

Thirdly, our sloyder chooses that *a fair proportion of the models should contain surfaces whose outlines are free curves.* This principle is of primary importance; it gives to Sloyd much of its educational value, and its inclusion may be fully justified. For outlines consisting of free curves must be worked under the guidance of eye and sense of touch alone—the rectilinear testing aids, such as the straight-edge and try-square, being necessarily useless here. From this it follows that the child, being unable to trust to mechanical aids, learns independence and self-reliance. The æsthetic side of his nature receives more complete training than it would were he kept entirely to objects of rectangular form. Finally, greater dexterity of hand and power

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of accurate observation and comparison result from the more varied demands made upon the worker in the shaping of such models. The training of the eye to see accurately ; the cultivation of delicacy in touch ; the encouragement of self-reliance ; the development of the sense of beauty in form ; the acquirement of greater dexterity of hand ; the calling forth and improvement of the powers of observation and comparison ;—these surely amply justify the sloyder in insisting upon the inclusion of models of curvilinear form in any set laying claim to the title "Sloyd."

Other principles of choice there are, but their lesser importance must condemn them to exclusion where space is limited, save one, which may be shortly dealt with and whose demand for a place will readily be allowed. It may be put thus :—*The series must afford a refreshing variety.* A glance at the models in Plate II. will show this variety to a large extent—variety in *size*, from a little parcel-carrier, only 7 cm. long, to the round stick, 80 cm. in length ; variety in the *woods* used—alder, beech, birch, fir, oak and pine ; variety in *shape and form ;* variety in their *uses*. To a child this diversity is a constant source of delight, and a powerful incentive to continued effort, and our sloyder thus again utilises the great educational force which lies in sustained interest.

So much for the principles of choice. On what principles does the sloyder *arrange* his models? The first reads thus :—*The series should proceed from the easy to the difficult and from the simple to the complex.* Justification of such a fundamental educational principle in any educational matter is, of course, unnecessary. But it may be well to point out that its application here has nothing whatever to do with any properties of the models, whether of shape, size, form or what not. The procedure from easy to difficult and from simple to complex refers strictly to the *order of the exercises* upon which the series is based, as already explained.

A second principle says that the models should be so arranged that *in the production of the early ones few tools and manipulations will be required, new ones being introduced gradually as the series progresses.* The reason for this will be seen in the necessity for training a child to the overcoming of difficulties in such a way as to prevent him from being unduly discouraged by tasks beyond his powers for the time being, while he is, at the same time, compelled to put forth his powers of mind and body to conquer the new tasks thus continuously and judiciously put before him. The operation of the principle in any Sloyd set of models can only be seen on a careful analysis of the series—a somewhat lengthy operation. Such an analysis of the Nääs set shown in Plate II. has been made and represents in diagrammatic form the progressive introduction of the 88

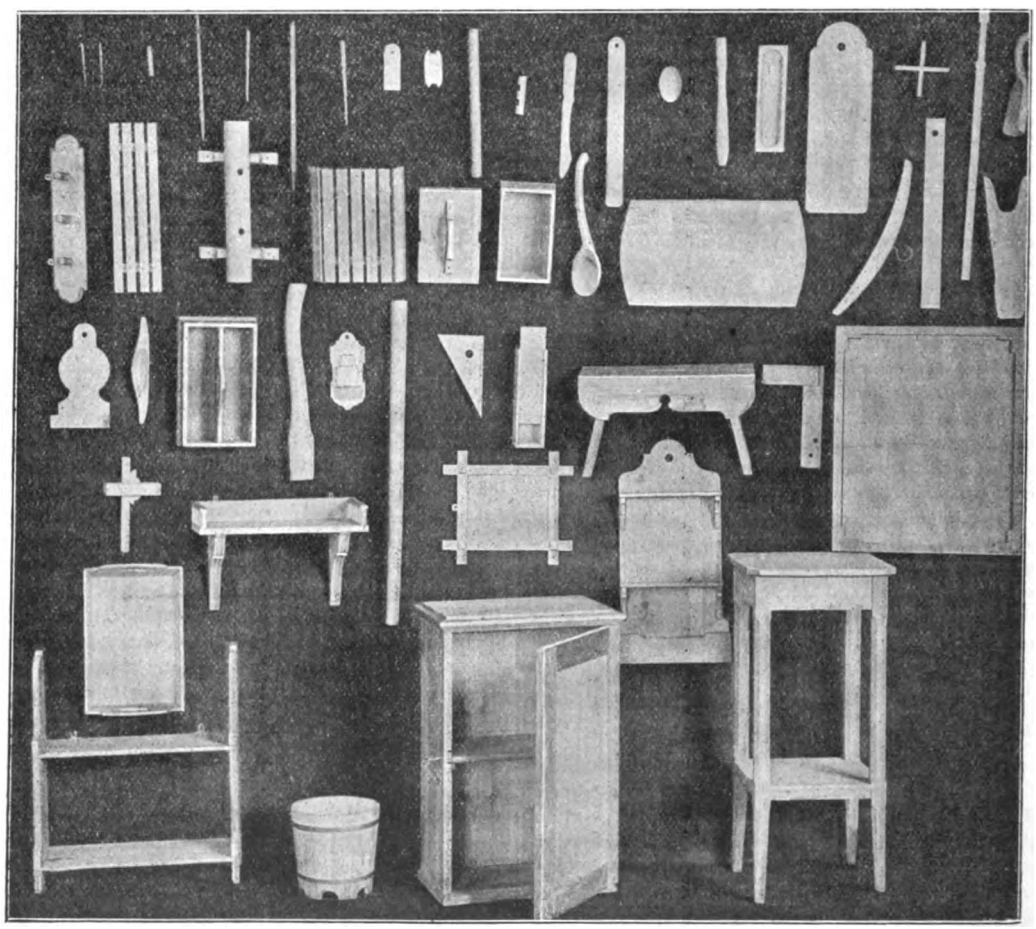

PLATE II.—MODEL METHOD. A Nääs Sloyd Set (Sweden).

The models are arranged in the order in which they are intended to be worked.

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exercises upon which it is based (and incidentally that of the tools also) as well as the exercises which occur in any one model, and a similar representation of any Sloyd set should show the same regularity in the matter.

The third principle of arrangement says that *every model shall be so placed in the series that the necessary qualifications for doing it exactly and entirely himself are found in the child.* That is to say, that the gradation should be such as to enable the child to proceed from model to model, doing the whole of each himself and accumulating in his progress the powers of body and mind necessary to the constructing of each model as he arrives at it, so that no particular one is found to be relatively more difficult than any one of its predecessors. This is one of the sloyder's ideals, but a minute examination of a series of models would be necessary in order to enable one to say whether it exhibited such a gradation. The above-mentioned diagrammatic representation shows that this principle is fully carried out in the Nääs set of models.

A fourth principle, and the last which we will take, says that *modelled objects should fairly alternate with rectangular ones.* A "modelled" object is one which takes final shape under the guidance of the eye and sense of touch, without, that is, the use of mechanical aids to test its form. The before-mentioned "curvilinear" models are such objects. The principle is, of course, based upon the need for variety in the maintenance of that self-propelling power, interest, and a glance along the lines of models in our Nääs set will show that it is fully carried out there.

Summary.

We have now followed our sloyder—albeit in a very sketchy manner—through all the stages of the work of construction of his system. We have seen his choice of exercises as a basis; we have remarked his decision to embody the exercises in models from the outset; we have noted the main principles which he lays down for his guidance in the task of choosing and arranging his models, and how his choice of these principles is governed by the educational aims he has in view. We may, therefore, shortly focus the system into an enumeration of its *characteristic features*; and these I would venture to offer as a touchstone, so to speak, of any Sloyd set of models, be it of Swedish, English, American or any other origin, whatever the number of its basic exercises, whatever the number of its models.

(1) There must be no preparatory exercises *as such.*

(2) Every model must be a complete object in itself and not merely a part of something.

(3) There must be a fair proportion of models containing surfaces whose outlines are free curves.

(4) The models must be objects of utility and whose uses the child may appreciate.

(5) The gradation in difficulty (based upon the exercises) must be such that a child may do every model, in its order, entirely himself.

These five points may not be exhaustive, but they are sufficient for all practical purposes; and the first four are such simple tests that they may be applied at a glance and by a person having no knowledge of woodwork whatever. Any set of models which satisfies *all* of these requirements establishes a claim to the title of "Sloyd," and *no set which is wanting in one or more of them can be rightly so named.*

Seeing that Sloyd is inseparably connected in the public mind with the knife, any exposition of the system should deal with the subject of its introduction among the tools generally used by sloyders. But this is only a very slight sketch of the system, and I can only allow myself one remark upon it, and that is, that *the knife is no more essential to Sloyd than is any single exercise or any one model.* Certainly, its use is advocated by sloyders, and with much reason, but a sloyd set of models may perfectly well be devised in which the knife has no part. (And the same may be said of sandpaper, which, in the minds of many, is inseparably connected with the system.) With the killing of the fallacy, so commonly held, that this is impossible, and the general realisation of the fact that models do not constitute Sloyd but are only the concrete expression of the Sloyd principles, the greater part of the opposition which the system still encounters in this country would melt away.

MOUNTAINS AS RAIN-PRODUCERS.

ONE of the common examination errors in geography mentioned by Mr. Chisholm in the February number of THE SCHOOL WORLD referred to the way in which rainfall is produced by mountain ranges. The general impression seems to be that the atmosphere behaves like a sponge, and that when a wind strikes against the side of a mountain range the moisture is squeezed out of the air like water from a sponge and falls as rain. It is almost unnecessary to say that this is a complete misconception of the function of mountains as regards rainfall, and it is largely due to loose or unqualified statements in text-books. The air may correctly be likened to a sponge, so far as its power of taking up more moisture depends upon the amount of moisture already present, just as the ability of a sponge to absorb water depends upon its condition of wetness, but beyond this the analogy does not hold good. Teachers may therefore very well consider whether an illustration which is so fruitful in incorrect ideas is not better left out entirely if its limitations are not adequately explained.

A paper by Mr. W. H. Alexander in the *Monthly Weather Review*, published by the United States Weather Bureau, describes the facts as to the exact relation between rainfall and mountains, and as we believe many teachers of physical geography are interested in the subject, a summary of the contribution is given below. It will be noticed that the cause of rainfall on the windward sides of mountain ranges is shown to be the expansion, and consequent cooling, of air forced into higher levels by the mountain. This is the cause which teachers should take pains to explain.

The amount of moisture which a given quantity of air will hold depends upon the temperature and pressure of the air. When air is saturated with moisture a slight fall of temperature causes the moisture to be given up; but whatever the humid condition of air—whether much water vapour or little is present—some of it is given up when the air is cooled below a certain temperature—the dew-point—at which the proportion of moisture present saturates the air.

This condensed vapour will appear either in the form of fog, snow, rain or dew, depending upon other conditions. Condensation is essentially the rushing together of the surplus molecules of aqueous vapour, forming small drops of water or crystals of ice, which become visible as fog or cloud. The tendency of these minute drops is to fall to the ground, but the upward air-currents are generally quite sufficient to sustain them until the drops grow to a larger size, when they are precipitated as rain. When the condensation is very rapid the upward currents are also rapid, and the raindrops are likely to be large. Of course snow is formed only when the temperature of condensation, namely, the dew-point, is below freezing.

Precipitation, therefore, depends upon a falling temperature, and the primary question is, how may this be brought about? The most common and effective ways, and in the order of in-

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creasing importance, are:—(1) cooling by contact with cooler bodies; (2) mixture with air of lower temperature; (3) loss of heat by radiation; (4) loss of temperature by the utilisation of heat in work. These can be considered separately.

(1) The direct contact of warm, moist air with a cold surface—it does not matter whether it be a glass containing cold water or a mountain covered with snow—must result in giving up heat to the cold object, which thereby becomes warmer. Now the quantity of heat that can be taken up by a cold mountain side is very slight. A little dew may be formed on the rocks, but this represents the extent of its power to condense moisture out of the air.

(2) When equal parts of cold and warm air are mixed together, both being saturated, a very slight cloud of haze is formed, due to the fact that the saturated warm air contains a little more moisture than was necessary to saturate the mixture, but this slight haze is the extent of the precipitation that can be formed in this way.

(3) When the air is nearly saturated in the daytime, it is apt to cool below its dew-point during the following night-time; there is thus formed a thin layer of fog near the surface of the earth, or of stratus cloud a few yards above the surface, or perhaps alto-stratus a few thousand feet above that. In either case, the lower side of the fog or cloud receives heat from the earth, while it is only the upper side that cools by radiation into space. During long nights this cooling may produce a deep layer of fog, or a thick layer of cloud, and from the upper surface of these there may fall a light, drizzling rain; but this is the maximum extent of the influence of radiation.

(4) The conversion of the molecular energy that we call heat into the movement of large masses that we call work is the most important method of cooling. Whenever a given volume of air flows into a region where the barometric pressure is less, it expands, and in this expansion must push aside the air immediately surrounding it. This is the work that is done, and it is exactly equivalent to the amount of heat energy that is consumed. Thus, the steam in a boiler flows into the cylinder and pushes the piston ahead, by doing so it does work and cools off. When the safety valve of the boiler is open, the steam rushes out with great force, expands greatly in volume and cools. In fact, it falls from the temperature within the boiler to the temperature of the open air. When this process takes place quickly and no other heat comes in to disturb the conditions, this is called adiabatic expansion or adiabatic cooling. Whenever a mass of moist air is pushed by the wind over a hill or mountain it expands as it ascends, because the pressure diminishes with altitude, and its temperature may easily be reduced below the dew-point, so that by cooling it forms a cloud, and by still further cooling may form rain. Ascending air, under the ordinary barometric conditions, must cool at the rate of 1° C. for about 100 metres of ascent, or 1° F. for 183 feet of ascent. Thus, suppose a cubic foot of air at 80° F. to be lifted 1,830 feet, it would then have cooled to a temperature of 70° F. and be saturated; should it be carried still higher, condensation must occur. It is evident that the height to which a body of air must be raised before condensation begins depends upon both the temperature and the humidity of the air at sea level. Hence in regions of high humidity comparatively low mountains may be important agents in bringing about rainfall, whereas in regions of low humidity very high mountains may have little influence. There are mountains which rise to such a height that the air about their summits has a temperature of freezing or less, so that the mountains have a crown of perpetual snow.

The office of mountains is to force the warm moist surface wind into higher regions whereby it is expanded and cooled, and in this way only do they bring about condensation and precipitation. A single peak, even if very high, may not be very effective, as the air currents may pass around it instead of over it, and will merely form clouds in the region of slightly diminished pressure and upward rising currents on the leeward side of the peak. But in the case of a mountain range the whole mass of air driven by the wind must pass over and must, therefore, rise to higher regions in order to do so. The mistake should not be made of supposing that the mountain "acts as a condenser" in the same sense that a blade of grass when chilled by radiation cools the air in contact with it and accumulates dew. It is evident that if a mountain did act in this way the moisture would be deposited on it in the same manner as dew or frost is deposited on the grass, or on the cool exterior of a glassful of ice water, and the precipitation would not appear as a cloud or as rain. In general, the mountains act merely as obstacles to the currents of air. A mountain may be very effective in the formation of clouds without having much influence on the rainfall. The region or side of the mountain upon which the rain will fall depends almost entirely on the direction from which the moist wind comes. In some cases the wind deflected upward by the mountain may continue rising for a short distance beyond the mountain, so that the rain may fall to the leeward rather than on the mountain itself.

FREE EDUCATION AT THE SCOTTISH UNIVERSITIES.

The nature of Mr. Carnegie's gift to the Scottish Universities has been described already in the July issue of The School World. The Executive Committee of the Trust has now distributed necessary particulars, together with forms of application, to students who propose to attend university classes during the coming session, and who desire to make a claim for the payment of their class fees. By direction of the Executive Committee a copy of the last paragraph of Mr. Carnegie's letter to the Earl of Elgin, chairman of the Trust, in which he explains the purpose of the benefaction, is sent to every would-be participator. The paragraph is as follows:—

"As your lordship is aware, my desire throughout has been that no capable student should be debarred from attending the University on account of the payment of fees. I believe that the conditions of application ensure a sufficient standard of merit, and I hope that the honest pride for which my countrymen are distinguished will prevent claims from those who do not require assistance, and that the invidious task of inquiring into the circumstances of each candidate need not be imposed upon the trustees. But, to further mark my personal belief and hope in this matter, I have made provision in the Trust Deed that the trustees may receive funds from others to be administered along with the funds placed by me. I consider this a valuable clause, believing, from my own experience with young men, that some students in after life may value the privilege of repaying advances received from the trustees, although these are free gifts. I hope the trustees will gladly welcome such repayments if offered, as this will enable such students as prefer to do so to consider the payments made on their account merely as advances which they resolve to repay if ever in a position to do so, and that this will protect and foster the spirit of manly independence so dear to the Scot."

All applications for fees must be sent upon particular forms *not later than Saturday, September 14th*, 1901, to Mr. William S. M'Cormick, Secretary to the Trust, at 2, St. Andrew's

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Square, Edinburgh. Students who have not yet passed the examination qualifying for admission to the classes for which payment of fees is desired, but who hope to qualify in October, should also apply in like manner not later than September 14th, stating what part, if any, of the examination has already been passed. The executive committee have determined that, until they have had an opportunity of considering all the applications sent in, they cannot undertake to advise or pronounce upon individual cases.

ITEMS OF INTEREST.

GENERAL.

AMONG the innovations introduced into the Oxford Local Syllabus for 1902 is the inclusion of a special period of general European history as an alternative to a period of English history. As this is breaking ground which is both new to many teachers and attractive in itself, we have arranged for an article dealing with the text-books and other helps available. Meanwhile we may mention, for the benefit of teachers who desire to start work on this period, that there is much sound advice about books suitable for schools and school teachers in Prof. G. B. Adams's "European History; an Outline of its Development." (Macmillan. 6s. 6d. net.) We select this from the many American manuals of "Universal History" because it is not only good in itself, but also readily procurable in this country.

THE distinguished Oxford tutors who are at present acting as history examiners for the University of London seem to be giving umbrage to others besides our correspondent last month. We observe that in the columns of the *University Correspondent* the English History paper set at the recent Intermediate Arts Examination is severely criticised. The syllabus specifies "English history treated generally, with a special study of portions of a standard work" (in this case Spencer Walpole, "History of England," vols. I. and II.). Our contemporary points out that the examiners confined their attention to the "standard work," and even there included one question which by no stretch of language could be considered to deal with "English History," but was concerned with purely French history. Fortunately for the examiners, though not for their victims, they are not liable to the penalties of Mr. Gilbert's jester—

> If the family fool tells a joke that's too French,
> Half-a-crown is stopped out of his wages.

THE Education (No. 2) Bill was read a third time in the House of Commons on July 30th. The short debate which preceded the division brought no new arguments to light, nor did it succeed in developing much enthusiasm on either side of the House. The Bill was read a third time in the House of Lords and passed on August 6th.

ON July 30th, the House of Commons went into Committee of Supply on the Civil Service Estimates, and on the vote to complete the sum necessary for the Board of Education Sir John Gorst took the opportunity to explain the terms of the Education Minute of July 3rd to which we made reference in our last issue. Incidentally the Vice-President attempted to justify the tone of his speech when proposing the second reading of the Education Bill (No. 2). A motion to reduce the vote by £200 in respect of the salary of the Vice-President gave rise to a discussion in which the now familiar ground was traversed of the relations of School Boards to secondary education in general and evening continuation work in particular.

A BILL to amend the law with respect to the removal of teachers in public elementary schools in England and Wales was introduced in the House of Commons on August 2nd by Sir John Gorst and read a first time. The Bill applies to certified teachers who have held their office for three years. If managers of schools either have removed or are about to remove them capriciously, unreasonably, or under a misapprehension of the facts, teachers may apply to the Board of Education, and the Board of Education will consider their application. In case the removal is on the ground of personal misconduct, there may be a local inquiry, and persons holding such inquiry will have power to summon witnesses and administer an oath. In the event of the Board coming to the conclusion that the managers have acted capriciously or unreasonably or under a misapprehension of the facts, the Board of Education may make an order on the managers to take one of two courses—either to reinstate the teacher or to make compensation to him by money or otherwise. The Bill, however, was dropped before the second reading was reached.

SIR M. M. BHOWNAGGREE submitted the following motion on the occasion of the House of Commons going into committee on the Indian Budget:—"That this House views with approval the efforts made within the last two years by the Viceroy and local governments in India to foster the indigenous industries of the country and promote technical instruction, and is of opinion that, for the better and more rapid attainment of these objects, a public inquiry into the present condition of industrial education should be held with a view to devising a thoroughly regulated system of elementary, technical and industrial training in connection with the existing educational institutions throughout India." Lord George Hamilton was unable to accept the amendment, and the motion was negatived.

THE Duke of Devonshire has selected the following gentlemen to be appointed Junior Inspectors under the Board of Education:—Mr. H. M. Richards, Headmaster of the County High School, Isleworth; Mr. F. G. L. Bertram, Tutor and Mathematical Lecturer at the Oxford Diocesan Training College, and Assistant-master of Magdalen College School; Mr. J. J. R. Bridge, late Head Classical Master at Stonyhurst College, and Professor of English at Patna College; Mr. C. H. Creasey, Principal of the Technical Institute, Wellingborough; Mr. H. W. Household, Assistant-master at Clifton College; Mr. H. J. R. Murray, late Headmaster of Ormskirk Grammar School; Mr. C. D. Pawle, Assistant-master in charge of Modern Language-teaching at St. Peter's School, York; Mr. A. H. Cherrill, late Classical Master at Louth Grammar School, and Teacher of Modern Languages under the Surrey County Council; Mr. A. R. Smith, House Tutor of the Borough Road Training College. It has not been stated what the duties of these gentlemen will be, but it is gratifying to know that they seem without exception to have had considerable teaching experience.

SOME recent incidents in the French educational world are worth passing notice, if only to illustrate the nature of the subjects dealt with by the Education Department in France. It seems that the impartial teaching—or what officially passes for the impartial teaching—of contemporary history is beset with difficulty, and twice within the course of a year has the Minister of Public Instruction placed his ban on the use of certain manuals in public schools—the one containing implied strictures on the present Government, the other avowedly written in the interests of clericalism. Again, in a circular addressed last March to the rectors of lycées and colleges, the Minister requires that in lessons dealing with that part of the programme defined as "development or transformation of the principles of 1789"—that

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is, the Revolution principles—teachers shall refrain from bringing in home politics posterior to 1875; and further, under no pretext shall historical works passing such limit be placed within the reach of pupils while at school. This year is fixed because then were voted the constitutional laws whereby the Republic was established on its present basis. The latest proscriptive circular—it was published in May—points to the existence of a serious evil. The Minister speaks of "attempts made during the last few months by associations and leagues having an open or disguised political character" to spread their principles among schoolboys, and he invites rectors of all grades to co-operate with members of their staff for the purpose of "prohibiting the distribution of all writings, pamphlets, circulars and prospectuses constituting an act of propaganda." Whatever opinions may be held about the wisdom of the earlier measures, we cannot but agree with a French commentator that M. Georges Leygues has been well advised in issuing this last circular.

The *Pall Mall Gazette* says that the French authorities are beginning to experience some little difficulty in recruiting the number of masters required for the Government schools. The situation has created the more surprise and embarrassment inasmuch as scarcely an example is known in France of an official career for which there is not a plethora of candidates. Moreover, until quite recently such has been the case as regards the Education Department. M. Devinat, one of the principal functionaries of the Education Department, has issued an exhaustive report on the existing situation, and sounded a note of warning. Unless something be done to popularise a calling that has fallen into disrepute, a dearth of schoolmasters must ensue. It must be confessed that when the facts are looked into the surprise is not that schoolmasters should be becoming scarce, but that they should be obtainable at all. The State accords them such a meagre pittance that for years their earnings are below those of most country labourers. After passing many examinations and obtaining at least two certificates, they are appointed probationers at the starvation stipend of £36 a year. Another examination lands them in the fifth class of schoolmasters, but their salary cannot be said to go up with a bound; it rises to £40. And at this almost incredibly diminutive figure it remains for a number of years—for half-a-dozen years at the least. Nothing is more common than schoolmasters who have turned thirty, and who have still only their £40 a year.

The Technical Education Board of the London County Council has directed the Higher Education Sub-Committee to inquire and report:—(*a*) as to the need and present provision for special training of an advanced kind in connection with the application of science (especially chemistry and electricity) to industry; (*b*) as to what, if any, developments are needed to secure efficient training in these subjects for senior county scholars and other advanced students who desire to qualify themselves to take leading positions in scientific industries. The Technical Education Board has also arranged to make a grant of £10,000 a year to the University of London, and has shown in many ways a great interest in the development of advanced scientific instruction in London.

The Technical Education Board of the London County Council has arranged a series of special evening courses at University College and King's College for the coming winter session. At University College courses under the direction of Professor J. A. Fleming will be given in advanced electrical measurements and electric tramcar traction. Lectures in the latter subject will be delivered by Professor Carus Wilson. The properties and testing of materials of construction will be dealt with by Professor J. D. Cormack. Under the direction of Professor Ramsay, courses in recent developments of chemical theory and methods of spectroscopy will be held. The lectures on spectroscopy will be given by Mr. E. C. C. Baly. At King's College Professor E. Wilson will lecture on alternating currents, Professor Capper and Mr. Waynworth on steam and gas engines, and Professor Robinson on water supplies and sewerage. Full particulars can be obtained from the Professors at the colleges.

The London Technical Education Board has also arranged free Saturday morning courses for teachers at King's College and Bedford College. Professor Hudson will lecture on the teaching of mathematics at King's College on alternate Saturdays during the winter session; Professor Grylls Adams and Mr. S. A. F. White will provide a course on physics at the same institution, while Professor Halliburton will lecture on physiology. Mr. J. W. Adamson will lecture at King's College on "Port Royal and contemporary French Teaching Corporations," and Professor H. G. Atkins on the "History and Theory of German Education." Mr. Holland Crompton will give ten lectures on the teaching of elementary chemistry at Bedford College. Teachers desirous of attending any of these courses should communicate with the Professors concerned.

The last report of the Technical Education Committee of the Middlesex County Council is a gratifying record of continued useful work. An annual sum of £300 is granted to each of the following schools:—Enfield Grammar School, Hampton Grammar School, Isleworth County School, Tottenham Grammar School, and Brondesbury High School. One half the cost of equipping chemical laboratories at the Hampton and Brondesbury schools has also been provided. We notice with considerable satisfaction that the Committee have had under consideration the serious want of secondary schools in their county, and that they are making their best endeavours to secure the co-operation of the District Councils in the task of providing new schools. In Middlesex, as in every other county, one of the greatest difficulties met with in the technical classes is that the students have not received a good general education. So used is the reader of education reports like these to coming across this all too familiar complaint, that it will come as a shock to him the first time the admirable preliminary preparation of technical students is recorded. How long will the change take? Evidently twelve years is not time enough.

The Duke of Northumberland has given a sum of £4,000 and a site for the establishment at Isleworth of a secondary school for girls corresponding with the Middlesex County School for boys at that place.

A successful vacation course for teachers in "Nature Study" was held during the first fortnight of August at the Harper-Adams Agricultural College, Newport, Salop. The Shropshire and Staffordshire County Councils offered a number of scholarships to headmasters of elementary schools to enable them to take advantage of the course, and many of the headmasters attended. In view of the increased interest in the work of rural schools now shown by the responsible authorities, these opportunities of informing themselves in biological science being placed in the way of country teachers are both valuable and opportune.

Dr. Kimmins contributes to the current number of *Child Life* a suggestive paper to which he has given the striking title "The Child as the Director of the Parents' Education." The article would form an excellent piece of reading for young married people about to undertake the duties of parents. "The normal disqualifications of the average parent" are summarised

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with scientific precision. Here are a few chosen at random from Dr. Kimmins's exhaustive list: utter ignorance of common-sense, psychology and physiology, sheer inability to answer truthfully and rationally the natural questions of an intelligent child, want of self-control and general deportment, and so on. Well may Dr. Kimmins say that, generally speaking, "the influence of the home is not calculated to have a good influence on the formation of a desirable character in the child, and this is largely because people will not take education seriously, they will not grasp the enormous persistent influence environment has upon the younger members of the household."

THE third number of *School Science*, a magazine devoted entirely to the teaching of science in secondary schools, has reached us. It is published in Chicago under the general editorship of Mr. C. E. Linebarger, who has the assistance of twelve associate editors individually responsible for different subjects of science taught in schools. This particular issue contains articles on astronomy, botany, physics, zoology and the equipment of laboratories; numerous new experiments in optics, chemistry and general physics also add to the practical value and interest of the nicely-produced periodical. *School Science* is another indication of the great enthusiasm which characterises the educational life of the United States.

THE Committee of the Geographical Association have arranged for the publication of three terminal numbers of the Association's *Journal of Geography applied to Education*. The editors will be Messrs. A. W. Andrews and A. J. Herbertson. The first number will appear in October, and will be sent free to all members of the Association. The price of the journal to non-members is to be a shilling a number; it is to be published by Messrs. G. Philip & Son.

ALL teachers of French and German should obtain a copy of the *Modern Language Quarterly* for July. It is a number of especial value even for this perennially useful and interesting periodical. There is, amongst other important contents, an exhaustive symposium on Modern Language Teaching, to which Messrs. Lipscomb, Allpress, Parez, and Miss Lowe contribute. As most of our readers know, the magazine is published by Mr. David Nutt.

THE Civil Service Commissioners have announced that open competitive examinations for (*a*) clerkships in the Second Division of the Civil Service, and (*b*) second-class clerkships, Lower Section, for port service in the Department of His Majesty's Customs will be held concurrently in London and various provincial centres, commencing on October 22nd next. The limits of age for these situations are 17 and 20, and candidates must be of the prescribed age on the first day of the examination. The subjects of examination will be as follows:—(1) handwriting and orthography, including copying manuscript; (2) arithmetic; (3) English composition; (4) précis, including indexing and digest of returns; (5) book-keeping and shorthand writing; (6) geography and English history; (7) Latin, *or* German (translation from and into the language); (8) French (translation from and into the language); (9) elementary mathematics, viz.:—Euclid, books I. to IV., and algebra up to and including the binomial theorem; and (10) inorganic chemistry, with elements of physics. Candidates for clerkships in the Second Division may not offer more than four of the subjects numbered 4 to 10, and of these 7 and 8 may not be offered together. Candidates for clerkships for port service may not offer more than five subjects besides the first three. The fee for situations (*a*) is £2, and for situations (*b*) £3. A candidate may enter his name for both examinations, provided he pays the higher fee and states on his application form which situation he would prefer in the event of his being successful in both competitions.

AT this competition not fewer than 150 candidates will be selected for clerkships in the Second Division of the Civil Service, and not fewer than 30 for second-class clerkships, Lower Section, for port service in the Department of His Majesty's Customs. The salaries of Second Division clerks are on the following scale:—£70, rising £5 annually to £100, thence by £7 10s. to £190, and finally by £10 to £250. There is a prospect of promotion to a higher grade with a salary of £250 to £350. The scale for second-class clerks for port service is somewhat different, viz., £70-£100, £100-£200, £200-£300, £320-£400. There is a prospect of promotion to principal clerkships with a salary of £420-£600. Intending candidates must return their entry forms, obtainable from the Secretary, Civil Service Commission, S.W., so that the Secretary may receive them on or before October 3rd.

SCOTTISH.

AN important circular has just been issued by the Scotch Education Department considerably modifying the nature and extent of the French and German papers at the Leaving Certificate Examination. Literary questions are no longer to have a place in the examination, as the Department have found that there is a very marked and increasing tendency to subject candidates to a course of instruction in "literature" through handbooks with very mischievous effects upon the pupils. Further changes consequent upon the above are that the lower and higher-grade papers will each be divided into two sections instead of several as hitherto. The first section will consist of translation and composition; the second will contain questions on grammar and (in the higher grade only) in elementary philology. The papers set for Honours will be entirely distinct from that set for the higher grade; the first paper will consist mainly of composition, and the second of translation, grammar and philology. The reproduction in French or German of a story that has been read aloud in English will still be an important feature in the higher and lower-grade papers, but an essay on some simple theme will take its place in the Honours paper. The circular further states that the Department are considering the possibility of testing in some form or other the candidates' knowledge of modern languages on its oral side.

THE changes given above are all more or less on the lines of the demands put forward by the teachers directly interested in the examination. Many, however, will view with regret the total abolition of questions on literature, as this subject might very well find some place in the Honours paper. Teachers will not calmly submit to the censure on their methods implied in the reason assigned for giving up this subject, and may very well retort with a *tu quoque* upon the Department, which by the questions set made the use of a text-book essential. For instance, in last year's paper the pupils were asked to give an outline sketch of Rabelais' monumental work. Could the examiner expect pupils to have first-hand knowledge on such a book, and if the question was not made to bring out first-hand knowledge (which is too absurd) then it was to test text-book knowledge, which the Department has always deprecated. Many other instances could be given of the direct encouragement to handbook cramming that was afforded by the nature of the questions set. But, after all, the main thing is that an evil which has long been recognised and pointed out by the teaching profession has at last been accepted as such by the Department and summarily abolished.

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THE latest circular of the Scotch Education Department further explains the provisions of the Continuation Code, especially in regard to technical education. By technical instruction under this code, the Department say, is to be understood instruction which aims at communicating to the pupils knowledge and facilities which have a direct bearing upon some special occupation, industrial or commercial. The methods of instruction and the subject matter should, as a rule, be considerably different from what pertains in schools which aim at giving a general examination. The Department propose to choose a limited number of schools which have had an outstanding success in the past. The schools will be almost entirely freed from the ordinary regulations of the Continuation Code, and will be allowed to develop on lines of their own as determined by the needs and necessities of the industries in the districts of which they are the centres. This circular is further important for a change of policy which it foreshadows rather than expressly declares. In view of the facilities which are provided in the Continuation Code for every kind of specialised instruction, it is hinted that steps may now be taken to relieve the curriculum of the schools proper, whether elementary or secondary, from elements and subjects which are foreign to their proper purpose. The overloaded curriculum of the elementary schools in particular has long been the marvel of American and Continental critics, but the lack of proper continuation schools made reform difficult, if not impossible. The Education Department moves slowly *mais il y arrive*.

PRINCIPAL LANG, at the closing graduation ceremony of Aberdeen University, took the Carnegie Bequest as his text. The heartiness of his acceptance of this gift was in striking contrast with the coolness and suspicion with which it was received in certain other academic circles. The pessimists have declared that "the whole tendency of the Trust deed, both in what it contains and in what it omits, is adverse to the idea of a liberal education, as that has been hitherto interpreted, disparages the ancient classics, and reduces the conception of the University to the level of a mere technical institution." Dr. Lang has no such fears. He is convinced, by a study of the aims laid down in the deed, that the ideal of a "studium generale" has not been departed from, and he has reason to believe, on the best authority, that Mr. Carnegie has no wish to deprecate the older disciplines. Mr. Carnegie's position was that the Arts courses were already fairly well endowed, and that the more pressing wants were in the departments of medicine and science.

THE results of the examinations for leaving certificates held by the Scotch Education Department on June 19th-27th inclusive are now to hand. Eighty-eight higher-class schools sent forward 5,465 candidates, and the number of papers taken was 21,494. The higher-grade schools and departments were represented by 353 schools, 11,940 candidates, and 34,592 papers taken. The totals show an increase, compared with last year, of 188 candidates, and 1,761 papers taken. In English 10,697 were presented and 5,985 passed; in Latin 2,855 presented and 1,510 passed; in Greek 872 presented and 600 passed; in French 7,195 presented, 5,086 passed; in German 2,741 presented and 1,819 passed; in mathematics, including arithmetic, 15,406 presented and 10,585 passed.

THE results of the University of St. Andrews L.L.A. Examination, 1901, which was held at numerous centres in Great Britain, Ireland, France, Germany, Turkey, Natal, Cape Colony, and the United States, have just been issued by the University. From the accompanying report it appears that 962 candidates entered for examination at 75 centres this year, as compared with 980 candidates at 84 centres in 1900. 294 candidates entered this year for the first time. From the commencement of the scheme in 1877, 5,402 candidates in all have presented themselves for examination. 137 candidates have this year completed the requisite number of subjects, and will receive the L.L.A. diploma of the University.

WELSH.

AT a recent meeting of the Carnarvon County Governing Body, a number of salient points were brought forward showing the difficulties to be encountered in a new organisation of schools. One point raised was whether a headmaster ought to be at liberty to become a member of a Board of Guardians. Mr. Owen Owen, the Chief Inspector, held that it was so far desirable that a central body should have the administration of the science grants that he thought £10,000 distributed by a central body would be of more avail than £20,000 scattered indiscriminately to separate schools. Mr. Owen also stated his opinion that £20,000 per year further was needed for the efficient and adequate support of the county schools. It was stated that at one school a B.Sc. had been engaged as assistant at a salary of £35 a year.

AT the same meeting, attention was drawn by Mr. Allanson Picton to the fact that women are excluded from the posts of head teachers. The scheme under which the schools were worked, he said, put a barrier to the advancement of women beyond the grade of assistants. Ultimately it was resolved that: "If the county governing body, at the request of the local governing body, so determine, the county school may consist of two separate schools—one for boys, for which there shall be a headmaster, and one for girls, for which there shall be a headmistress, either in different portions of the same building or in separate buildings." There are in Wales only a very few separate county schools for girls, most of the schools being dual schools, under a headmaster. Probably many of the county schools are too small to have separate buildings, but there is no doubt a great deal that will be said in favour of the Carnarvonshire resolution.

MR. A. G. LEGARD, the Chief Inspector of Elementary Schools for Wales, has many points of interest in his Report on Welsh schools. He recognises the need for better buildings, better desks, sanitation, and a good water-supply. He urges the supply of more libraries in the schools. "Wales has long been honourably distinguished for its interest in literary matters, so that I trust the 492 schools in the Welsh counties which now alone possess school libraries will soon be doubled in number." As to attendance, Mr. Legard has to point out that it is most unsatisfactory, although there is a slight increase, viz., 1·2 per cent. on the registers, and 0·8 per cent. in attendance.

PERHAPS it is hardly realised sufficiently that a very large proportion of the Welsh schools are rural schools. Mr. Legard tells us that, out of 1,695 separate school buildings in the Principality, about 20 per cent. are in parishes with a population under 300, and about 27 per cent. in parishes with a population under 500. "There are only three county boroughs in the Welsh division, very few urban centres of the second rank, and if we except the mining villages in South Wales, the quarrying villages of North Wales, and a few towns on the sea-coast, the people mainly live in scattered hamlets, and are employed in agriculture." Mr. Legard's suggestion is that there must be an adaptation of curriculum to the rural school. "Much can be done to cultivate children's powers of observation, to give them interest in their surroundings, and to awaken tastes which will be of the greatest possible benefit to them in after life."

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FOR the post of Assistant-Inspector to the Central Welsh Board, the chief work of whom will be to inspect and report on the county schools in the science teaching, there were sixty-four candidates. Of these seven were selected and interviewed by the Executive Committee. It is worth while noting that all the candidates on the final short list showed not only high attainments in the study of science, but all had had a considerable and adequate experience in teaching the scientific subjects in secondary schools. This is as it should be. It is clearly desirable that the inspector of the work of teaching should have himself been a teacher. He may make an admirable critic without having had such experience, but he can hardly be expected to have that inner sympathy that comes to the observer of teaching who has himself known its difficulties.

THE matriculation lists both of the University of Wales and of London have a good representation of names from the pupil-teacher centres. This is a hopeful sign for the future of elementary-school teaching. The matriculation list of the University of Wales is also an earnest of the good working of the county schools.

IRISH.

AN addition has been made to the Commission appointed to consider Irish University education, by the appointment of Professor Dickey, of Magee College. Mr. J. D. Daly, M. A., has been appointed Secretary to the Commission. He is a Catholic, a graduate of the Royal University, now Secretary to the Board of Agriculture and Technical Education, and he has been Secretary to the other two Commissions which have recently sat on Irish education, that on National education and that on the Intermediate System—a position in which he won universal good-will by his ability and courtesy.

THE prevalent view of the new Intermediate scheme among all classes of teachers is that it is in many respects unworkable, and exceedingly difficult for teachers and pupils alike to understand and reduce to practice. While some of its provisions are approved of, the most that is said for it as a whole is that a fair trial should be given to it, and that it should not be judged till that has been done. The Teachers' Guild (Irish Branch) has drawn the attention of the Board to the lack of confidence that will be caused by the marks won by candidates for exhibitions not being published, and by the total number of marks assigned to each subject being withheld, as also the method according to which exhibitions and prizes are allotted. The advocates of the Irish language are indignant at the position assigned to it in the scheme. The Association of Catholic Headmasters met to consider the new Intermediate scheme, at the end of June, and have sent in a memorial to the Board objecting to the above-mentioned provisions, also to the abolition of prescribed authors, the requirement that drawing shall be taken with science, that managers shall sign a consent to having their schools inspected without any information being given as to the nature of the inspection, that the entire curriculum of each pupil for the year shall be given in November, without the option of changing it subsequently, and to several other matters. It is unlikely that the Board will make any modification of the scheme for at least a year.

DURING the month of July courses for science teachers were held in the Royal College of Science, Dublin, and art classes for teachers of drawing in the School of Art, Dublin, under the direction of the Department of Agriculture and Technical Education. They were held mainly as an assistance to teachers in the science and art courses in Intermediate schools which have been arranged by the Department. A very large number of teachers attended.

THE Council of Alexandra College has invited Mr. Louis von Glehn to give a course of practical instruction in the "natural" method of teaching modern languages this autumn. The course will commence September 2nd, and will include each day a lecture, and two lessons to classes of pupils, both to young children who know no French, and also to senior students, the lessons being followed by criticism and discussion. The Central Association of Irish Schoolmistresses will assist by enabling their members to attend on special terms, and they also arranged with the heads of the Ursuline Convent, St. Mary's, Waterford (which itself has a training department for teachers in connection with Cambridge), and the Dominican Convent, St. Mary's, Cabra, that Mr. von Glehn should give similar courses in those institutions during the month of August.

MUCH interest is felt in the resignation of Dr. Walsh, the Catholic Archbishop of Dublin, of his seat on the National Board, in consequence of defects in the working of the system, and the inability of the Board to control the officials. The Archbishop points to the issuing by the latter of circulars and letters to teachers and managers which are unauthorised and erroneous in statement, and the mismanagement of the book-stores and other evils, and he has demanded a public inquiry. The Resident Commissioner, in conjunction with eleven of the other Commissioners, in reply, issued a manifesto, attributing the irregularities to the enormous mass of work consequent on the introduction lately of changes in National education, and the Government have declined at present to hold an inquiry.

CURRENT HISTORY.

IN the middle of last century it seemed as if, in England at any rate, commerce and industry were to be free henceforth from government control. It was then believed that what was for the individual good must be in the end for the general good as well, and much scorn was poured on the "old-fashioned" principles and practices which hindered individual enterprise in the "supposed" interests of the community. Most of the ordinary text-books assume the principles of Adam Smith and his followers, and preach the advantages of "liberty" and "self-help." But now it would seem as if our histories must be re-written. The reign of "liberty" was not final; nay, apparently it was only a momentary reaction, as evanescent as Roman Catholicism under Mary Tudor or Republicanism in the time of Oliver Cromwell (though to the contemporaries of those two periods each seemed a final consummation of periods of change). For there are now signs abundant that the old ideas are still with us, not in a state of decline, but as triumphant as ever. At least, we judge so when a corporation so powerful as Birmingham, not only in wealth but in political leading, can act as they have been doing recently. Mr. Mond has invented a new gas which can do for 2d. what ordinary gas cost 1s. to effect, and he seeks for parliamentary sanction to provide a certain area with his commodity. But Birmingham opposes him because "they themselves supply gas and electricity for power and heating purposes, and, they say, it is *contrary to public policy* to allow a company to compete with them, and thereby jeopardise the money invested by the ratepayers in these undertakings." Many practical sermons could also be preached from this text *à propos* of Socialism; but those we leave to the ordered imagination of our readers.

STATES differ one from another in the degree to which they carry decentralisation of government functions. Some have very little of such delegation of powers, such as France, where most matters are controlled from Paris. Others have more—*e.g.*, England, where our municipalities and counties manage

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many departments of government. Others, again, still more, as the U.S.A., where each State has its own laws of, *e.g.*, murder and divorce, or as the old Persian Empire, where one satrap could even fight against his neighbour official. And in this matter of decentralisation States are not constant; in every country there is always at least the possibility of change either centripetal or centrifugal. Some illustrations of these generalisations have occurred recently. Spain is contemplating the granting of local control of local matters not only to Catalonia, that province "rebellious of old time," but to all the provinces of the kingdom. We note that, even in federating Australia, inter-State jealousies render tact necessary in the royal visitors. France is granting to Algeria the right to discuss its own Budget. The new Bishop of London "does not favour the partitioning of London, because there is a growing unity about London, from the municipal point of view," yet he intends to delegate much of his work to suffragans. The southern vice-roys of China object to certain taxes on the ground that, as Peking caused the trouble, it is unfair that they should pay the whole cost. It is feared that the question is likely to cause serious inter-provincial friction. Mr. Forbes Higgins excuses temporary outbursts of temper, animosity and spleen in the U.S.A., because they are "not in any degree whatever indicative of national feeling," but they are due, he says, "to the fact that Americans are not yet homogeneous, but still largely conglomerate."

In the July number we remarked how the Constitution of the U.S.A. bound the present Legislature of that country. We have now an illustration how the modern Americans, when the desire is strong enough, manage to shake themselves free from their ancestor-appointed shackles. The Constitution contains clauses providing for amendments, but the method therein prescribed is so unwieldy that the only important modifications made during the century of its existence were the effect of the great Civil War. This method, therefore, is rarely contemplated. But in the Supreme Court the United States has an instrument of conservative and constitutional change which has proved very effective. From this court there is no appeal except to force, and its decisions are affected sometimes in great issues by political as well as legal ideas. Now the U.S.A. has lately acquired territory; indeed it has all through its career been characterised with as much land-hunger as the most ambitious of old-world monarchies. But these new territories are inhabited by uncivilised peoples, and according to the Constitution and its old interpretation, these must forthwith be admitted to equality with the other citizens of the Western Republic. This principle, however, gives rise at once to difficulties fiscal, representative and others. Accordingly the Supreme Court has come to the rescue, and, by a majority of five to four, its members have "interpreted" the Constitution according to the new ideas. Porto Rico, the Philippines and Hawaii can be regarded as *foreign* possessions. Duties can be levied on imports from these islands, their inhabitants have no right to the American franchise. All men are not equal.

The House of Commons has given orders that copies of Magna Carta, the Habeas Corpus Act, and the Bill of Rights shall be placarded in every parish, and specially in all places of worship, whether of the Established Church or of dissenters. Scotland is to be similarly placarded with copies of the National Covenant of 1638. These statements are not true. The action is ridiculously impossible, yet it would be the exact parallel of what is happening in France, where the Chamber of Deputies has ordered the placarding of France with copies of the 1791 Declaration of the Rights of Man. What is the reason for the difference between the two countries? It is that the British Constitution exists by its own inherent power. The British Constitution *is*, independently of all our constitutional laws, nay, we might almost say, in spite of them. The French and other constitutions exist only in virtue of certain documents. The contrast is the same as would be between two men, one of whom could prove his existence only by the production of his birth certificate. The British Constitution exists like the real Alice: the others are like what Alice supposed she might be—only something in the Red King's dream.

NEW TERRESTRIAL GLOBES.[1]

In the early stages of instruction in geography a terrestrial globe is a most valuable aid to good teaching. The pupil who has become familiar with the features of a good globe has a very satisfactory groundwork upon which a correct knowledge of the earth can be built. To use a colloquialism, "he knows his way about" the earth; and the name of a country or place conveys a definite idea of locality. A globe is an atlas on a uniform scale, showing the general distribution of land and water, with true outlines and correct relative positions; and many long-lived misconceptions would be avoided if every school had several globes which could be examined by the pupils. As soon as a pupil understands a map of the neighbourhood in which he lives he ought to be made acquainted with a terrestrial globe, for time spent in examining it is always repaid. A true plan of the earth can thus be impressed upon the mind, and the details can be filled in from maps at a later stage of study.

The chief objection to the more extensive use of globes is that, if they are large enough to show any details, they are too cumbersome and expensive for school use, while, on the other hand, small globes can only give very general ideas as to the divisions of the earth's surface. But these ideas are of fundamental importance; and just as, on the concentric system of teaching geography, a rough survey of the world is made and the details are afterwards filled in, so a view of the earth as a whole should be taken before the minute analysis of portions of it. A globe sufficient for rudimentary purposes can be obtained for a shilling or two, but of course it is more satisfactory to use larger globes such as those under notice. It is, however, of little use to place a globe upon a table and talk about it. There should be several globes, so that the pupils can inspect them individually and see for themselves the trend of trade routes, the relative distances between places, and comparative sizes of countries and continents.

This, we are very well aware, is only possible in schools exceptionally well equipped for teaching geography. Usually there are only a few wall maps available, and these are dirty and out of date. But this should not prevent us from urging that better provision should be made for illustrating geographical facts in the schoolroom, not only by a liberal supply of globes, but also by good charts, modern maps, photographs, models and lantern slides.

A globe nine or twelve inches in diameter cannot, of course, show many details, but it is much to be preferred to a map when facts relating to the whole earth have to be represented. For instance, the principal steamship routes are shown upon Messrs. Philip's new globe, and the distances in nautical miles are given. An ideal way to use such a globe would be to make pupils find the routes and distances to various places, and make a list of places at which they would like to call in making a journey from, say, London to Colombo. The globe also

[1] Johnston's New Century Globe. Diameter, 12 inches. (W. & A. K. Johnston.) 21s.
Philip's Educational Terrestrial Globe. Diameter, 9 inches. (G. Philip & Son.) 15s.

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shows ocean currents, and is very clearly printed. It is mounted upon a wooden pedestal, with a brass half-meridian, which is, however, not divided to show degrees of latitude. The price (15s.) is low for a nine-inch globe of good quality, and we are glad to bring this one before the notice of our readers.

Messrs. Johnston's new Globe is also an excellent one for general purposes. It does not show steamship routes, but it has other noteworthy characteristics. The new date-line, where ships sailing from west to east drop a day, while those sailing from east to west add a day, is clearly shown, but the fact that it does not lie completely on a meridian of longitude will probably cause some perplexity among inquiring pupils. The reason is that the change of date is merely a matter of convenience, and the line has been agreed upon which causes the least inconvenience. The isothermal lines for July are shown in red, and those for January in blue. A teacher who knows his meteorology can make these lines the subject of instructive lessons, and they are far better represented upon a globe than on a map in an atlas. It must be remembered that a map more than a yard wide would be required to show the earth's surface upon the same scale as on a 12-inch globe. The only objection we have to the representation of isothermals is that too much faith is frequently put in them, instead of regarding them as approximations to the truth. On some maps and globes, for instance, the winter isothermal of 40° is shown curving round the north of Scotland into the North Sea, but on other maps and globes—Messrs. Johnston's being one—this isothermal runs down the Irish Sea and across the west of England. We mention this merely to show that isothermal lines are not curves of mathematical precision. Ocean currents are shown upon the globe by white lines, and we are not altogether pleased with this plan. It is misleading to represent ocean currents of water in this way upon a globe having isothermals upon it. Pupils are apt to think that an isothermal line represents a current of air just as the other lines indicate currents of water. However, we do not consider this a serious defect; for the globe is really an excellent one for schools, libraries and homes. The stand is of heavy metal, and the half-meridian is divided into degrees.

Schools in which the attempt is made to give pupils correct ideas concerning the world on which we live should possess several globes like those we have here briefly described.

RECENT SCHOOL BOOKS.

Modern Languages.

Morceaux Choisis. Edited by R. L. A. Du Pontet. xxiv. + 140 pp. (Arnold.) 1s. 6d.—We can recommend this as an exceptionally good selection of prose passages from standard French authors. The extracts average a page in length, and represent the most varied styles. There are biographical notices of the authors, which are distinctly good, considering how brief they are. Some explanatory notes are given at the end of the book; these refer mainly to the subject matter, and do not suggest renderings. The book is well and carefully printed. We doubt whether it would not have been wiser to adhere to a uniform spelling; certainly the hyphen after *très* which appears in some of the passages would have been better omitted. We have noticed hardly any slips; the year of Sarcey's death is not given on p. xxii.; *rhythme* in l. 4 of No. 30 should be *rythme*; and in l. 13 of No. 87 *cet* should begin a fresh sentence. The statement that "*lui quinzième* is a Grecism" (note on No. 15) has often been made, but is doubtless incorrect; exactly the same construction occurs in Old English, in German, in Sanscrit and probably in other languages.

Classics.

The Idylls of Theocritus. By R. J. Cholmeley, M.A., vi.+391 pp. (Bell.) 7s. 6d.—In the introduction the editor puts together the scanty and inconsistent notices of the poet's life, upon which very different hypotheses have been built, and makes out a very good case for his own view. He pours good-humoured scorn on those who are for ever detecting allusions to the relations between Callimachus, Apollonius, and Theocritus. Then he discourses on the style, dialect, and verse, and discusses at length the authenticity of the poems, and concludes with a general critique on the history of the Pastoral. The text has a short *apparatus criticus* at the foot of each page, in which we note here and there new readings by the editor. The Epigrams and Megara follow the Idylls. The notes are scholarly and sufficient for all purposes, and are specially rich in parallel quotations. Then follows an appendix on dialect and a good index. There was undoubtedly an opening for an edition of Theocritus for schools and colleges, and the present volume will supply the want. It is, however, a pity that M. Legrand's "Etude sur Théocrite" could not have been more used by the editor.

Latin Syntax Exercises. Books I.-V. By L. D. Wainwright, M.A. (Bell.) Paper, 8d. each.—The names of these books are respectively "The 'Ut' book," "Conditional Sentences," "The 'Cum' book," "Oratio Obliqua," and "The 'Qui' book," but each of them contains exercises on allied constructions—*e.g.*, "Ut" carries with it *ne*, *quominus* and *quin*. The idea of separate books for these exercises is novel, and on the whole well carried out. They will be found useful for constant practice in idiom.

Scenes from Sophocles, Ajax. Edited by C. E. Lawrence, M.A. (Clarendon Press.) 1s. 6d.—This edition follows the lines of Sidgwick's "Scenes from Greek Plays." The choral parts are omitted, and the play brought within the compass of a term's work for middle forms. The notes and introduction are suited to their purpose, although the account of the metre is superficial and would have to be explained and amplified by the teacher. We doubt whether the Dionysiac theatre would hold 30,000 people, a statement frequently repeated in such books as this. Mr. Lawrence's remarks on the orchestra suggest that he has confused the Roman and Greek types of theatre.

A Beginner's Book in Latin. By Hiram Tuell and H. N. Fowler. (Sanborn.)—This book belongs to a familiar type: it consists of exercises, each of which has its portion of accidence and syntax and a few words, together with occasional reading lessons. Only experience could test its value, but as far as an examination can show, it seems to be good. The pace is not too quick, the words and constructions used are not many, and all sorts of changes are rung on them. Grammatical tables for reference, a vocabulary, and a number of pictures add to the usefulness of the book.

The Latin Pronouns, Is, Hic, Iste, Ipse: a Semasiological Study. By C. L. Meader, Instructor in Latin in the University of Michigan. (Macmillan). 7s. 6d.—This is a very dry book to read, but a very useful one to study. It contains detailed statistics for these pronouns from the earliest Latin literature to the fathers and the Romance languages; and shows by its tabulations how the pronouns weakened and changed in meaning, overlapt, and were reinforced, and the prevailing usage with their different forms. There is a common notion that *is* is prosaic; but Mr. Meader shows that this judgment is super-

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ficial. Certain forms of it (*i.e.*, *is*, *ea*, *id*) are common in poetry, until the Augustan age, especially in certain formulæ; and the other forms are almost exclusively found in prose, *eius*, in prose the commonest of all, being hardly used by the poets. The use of certain of these pronouns as the definite article is interesting, and certain popular mistakes are corrected in this connection. Indeed, this book will be indispensable as a corrective to the grammars, which are all very vague and inaccurate in their accounts of the pronouns here dealt with.

The March of the Ten Thousand: being a translation of the Anabasis, preceded by a Life of Xenophon. By H. G. Dakyns. (Macmillan.) 3*s.* 6*d.*—This is a deeply interesting book. Xenophon's story is thrilling, and we cannot but believe that boys would like it as much as a novel if they could read it in English. There are three maps and a full index. The translation and Life have been for many years before the world, and need no commendation of ours. The *Life* is as good as it could be, and so written as to incite readers to rivalry with great deeds.

Euripides: Medea. By J. Thompson, M.A., and T. R. Mills, M.A. 108 pp. (Clive.) 3*s.* 6*d.*—The editors have consulted the standard authorities, and in the notes usually give the view which they accept without discussing others—a method which simplifies the work of the intending examinee. Various readings and conjectures are given and explained. The whole book is quite of the serviceable character which marks the "Tutorial Series."

Sallust's Catiline. By J. B. Greenough and M. G. Daniell. xii.+103 pp. (Ginn.) 4*s.*—This is a revision of Allen and Greenough's edition, differing from that in the marking of long vowels throughout the text, the rewriting of the notes, and the addition of a vocabulary. The former introduction is retained. The Latin spelling for the most part is that of the antique forms used by Sallust. In the notes the practice of reference to certain (American) grammars, generally four in number, gives some pages a strange appearance, as they very largely consist of figures. In other respects the commentary is satisfactory. The etymologies in the vocabulary leave much to be desired. The latest researches are not laid under contribution. The book is expensive beyond its worth.

Virgil's Aeneid. Book I. By M. T. Tatham, M.A. xl.+119 pp. (Arnold.) 1*s.* 6*d.*—To add another to the many editions of the books of Vergil (we still protest against the *i*) requires justification. This may possibly be found in the present instance in the "New Oxford Text" presented, and in the introduction on Vergilian usages, which will be useful for beginners. The notes owe more to Conington than anyone else, and seem to be somewhat unsatisfactory owing to the desire of the editor to make them serve for beginners and more advanced students at the same time. Some are very good, but "21, *late regem*, 'with wide rule,'" is an example of a very poor one.

Edited Books.

The Cowper Anthology. By Professor Edward Arber, F.S.A. 312 pp. (Henry Frowde.) 2*s.* 6*d.*—It is very difficult to speak of this volume, or indeed of any in this wonderful series, in terms of too high praise. Professor Arber has gathered in this particular volume flowers from the garden of eighteenth-century poetry whose very existence is probably absolutely unknown to nineteen out of every twenty people who may justly hold themselves to be well acquainted with the main literary features of the epoch with which this volume is concerned. Many of the rarest names in literature are to be found upon the contents page, and those who take this volume as the starting point for many excursions into the byways traversed by contemporaries of Cowper will find themselves pleasantly and profitably occupied for a long time to come. The taste displayed in this selection is as perfect as the specimens are comprehensive.

S. John. (The Books of the Bible.) By A. E. Hillard. 127 pp. (Rivingtons.) 1*s.* 6*d.*—The introduction to this volume is somewhat more comprehensive and longer than in preceding cases. It is, however, scholarly and masterly, and the sketch of Palestine in the time of Christ can hardly be too highly praised. The running marginal excursus makes it very easy to refer to any point which needs clearing up. The notes are exceedingly helpful, and at a marvellously cheap price the volume is marvellously well done.

The Gospel according to S. Matthew. By G. Carter, M.A. Second Edition. 173 pp. (Relfe Bros.) 1*s.* 6*d.*— It is not at all wonderful that this admirable volume should have reached a second edition; indeed, it would only be reasonable testimony to its merits that it should run other editions yet. No practical teacher should be without it, because such a mass of useful and necessary knowledge is here condensed and put in an attractive and unmistakable fashion that a great deal of labour can be saved by using it, without running the risk of degenerating into mere cramming habits.

Chaucer (*The Prologue, The Knight's Tale, The Nonnes Prestes Tale*). By Mark H. Liddell. cxxi.+221 pp. (Macmillan.) 3*s.* 6*d.*—This volume is an appalling, though at the same time a valuable, display of erudition. The author declares that primarily it has been prepared for class-room use, and a very slight examination of it is sufficient to make evident the fact that only somewhat advanced scholars can use it; but students of Middle English Grammar will find in it a tremendous fund of information very succinctly and clearly put. Mr. Liddell's great concern appears to be that modern Englishmen shall be rendered able by means of this volume to read and to speak the lines of Chaucer in close approximation to the pronunciation of that worthy's own (and brilliant) day. To this end he exhibits all the scientific resources which can be put to the service of such an aim; and incidentally he glorifies "the real meaning of scientific method in English study." Without desiring to be in the least ungracious or hypercritical, in spite of the prodigiously clever scholarship of this book, it is not quite easy to agree on this point with Mr. Liddell. Latin pronunciation is not a settled question, yet who is the worse for the lack of it in reading Vergil? Greek is beset with the same dubiety, and yet Homer is appreciated by hundreds of readers who have no pedantry about them; and why the author of this book should sneer at "our *so-called appreciation* of the 'Canterbury Tales' because the majority of people who read them are not adepts in the niceties of Middle English grammar, it is not quite easy to see. Indeed, when did a grammarian ever truly appreciate anything in literature? What wise or fruitful word of criticism ever yet emanated from any purely pedagogic person? When will professorial gentlemen ever understand that artistic and literary appreciation is an art by itself, almost independent of grammarianship and quite above it, and also, if not quite so commanding as the creative genius, at least much more subtle; and in its penetration only equalled by its delicacy? With the exception of what one thinks to be this defect in the author's point of view, this work is highly commendable.

The Globe Poetry Books. Parts I., II., III. About 100 pp. (Macmillan.) 6*d.* each.—A selection of English poetry graded to suit juniors, intermediates and seniors; very useful and well printed; provided with biographical notes of a serviceable brevity; and in every respect worthy of the attention of prac-

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tical teachers. The selection for juniors (Part I.) is exceptionally able and valuable; but why retain the spelling "Lupracaun" in Allingham's "Fairy Shoemaker" instead of Leprechaun?

Poems of English History, 61-1714, A.D. By J. A. Nicklin. 146 pp. (A. & C. Black.) 1*s.* 6*d.*—The author of this most useful collection speaks of it with great modesty, and disclaims many titles to praise which are at least supplanted by as many more. Teachers ought to find it uncommonly valuable in assisting their work in the teaching of history, as it tends to remove what the author most justly calls "the isolation of literature and the detachment of literary teaching from the studies which are concerned with the subject matter of literature." Too high praise cannot be given to the selection of material in this collection, from which much is omitted, it is true, but that which is retained is extremely valuable. A larger volume fulfilling the more ambitious aim at which Mr. Nicklin first hints would be very welcome at some date in the near future. This present volume is beautifully illustrated.

The Story of the Abbot. (*For Young People.*) Arranged by Harriet Gassiot and Edited by W. M. Mackenzie. 56 pp. (A. & C. Black.) 6*d.*—This is but a very tiny booklet, and it may be gravely questioned whether the habit of deleting Scott, and then somewhat learnedly editing the deleted edition, is a very wise course to take, even with a view of popularising the essence of his story-telling and making Scott a veritable children's friend. The deleted popular standard novel which somewhile sold for a penny, what time Mr. W. T. Stead and other journalists strove together, is, we believe, sold (and deleted) no longer; probably to the great gain of the literary public, and certainly not to the loss of any author. And Sir Walter Scott at sixpence might be tolerable, but the quintescence of Sir Walter Scott (milk for babes crystallised into tabloids) is dear at any price. Let us have the giant in his strength, and the wizard magical; but not otherwise, even for childhood's sake. The thing is, however, exceedingly well done, and certainly merits praise as a literary task.

Scott's Old Mortality. Edited by Arthur T. Flux. 472 pp. (A. & C. Black.) 1*s.* 6*d.*—This volume has received two editions recently, and the present attempt carries on the general features of the preceding volumes in a series which is now somewhat well known. There is absolutely nothing to remark upon its individual excellence. Some educationists approve of the method followed in this edition of Scott, but it has not yet succeeded in riveting attention for any literary qualities. It is, perhaps, serviceable, and it is certainly cheap.

The Story of (*a*) *Quentin Durward*, (*b*) *Old Mortality*, (*c*) *Ivanhoe*, (*d*) *The Talisman*, (*e*) *The Monastery*, (*f*) *Rob Roy*, (*g*) *Fair Maid of Perth.* About 55 to 90 pp. (A. & C. Black.) 6*d.* each net.—More tabloid novels. This series has been already noticed in these columns, and the above-mentioned booklets carry on all the features, good, bad or indifferent, of foregoing numbers in the same edition. They are called as a sub-title "Scott Readers for young people," and it *is* possible that the young people may benefit more than Scott loses in their production.

English.

The Essentials of the English Sentence. By E. J. MacEwan, M.A. 310 pp. (Boston: Heath & Co.) 3*s.* 6*d.*—Another singularly well-done American text-book, abounding in excellent matter and plenty of appropriate exercises. Mr. MacEwan relies entirely upon grammatical facts, and purposely ignores composition and construction. This course shortens his book, and likewise renders his method simple and clear; but it might have been easier still if verbs had been left simply transitive and intransitive. Mr. MacEwan's introduction of the factitive predicate seems to complicate matters unnecessarily, and his Rule VII. (on p. 153) on this subject is by no means the most useful of the many good points in his treatment of syntax. Great use is made in this volume of a system of diagramming as a method assisting the analysis of sentences mechanically. It has undoubted usefulness, but some of the examples given by the compiler have a forbidding appearance, and one trembles to think how some passages in Milton, and the Apostle Paul, and Carlyle, and certainly Walter Pater, would look if this method were applied to them. In compound-complex sentences, and in analysis of any style where ellipses are frequent, it is very doubtful whether any average pupil would find this plan any more serviceable than the usual one of division into parallel columns, though of course to an expert the procedure would be easy; and the waste of space is frightful, which is also commonly a consideration of note.

Notes for Teachers of English Composition. By G. R. Carpenter. 29 pp. (Macmillan.)—This is another admirable American contribution to the teaching of English. The excellence of Professor Carpenter's work is already well known, and as a supplement to his previously-issued text-books this collection of practical hints will be found most serviceable. The "plan" of a "Four-year Course in Composition" herein detailed is unfortunately, so far as English schools go, for the most part only to be regarded as a counsel of perfection at present. If it could be followed, a great deal that is crooked would be made straight, and many rough places plain. The thoroughness with which Professor Carpenter sees through current misconceptions of the importance of English literature study may be gathered from his statement that an average student "will not be helped much by earlier writers on rhetoric or by Bain. There is no good book on English usage." Which certainly ought to suggest the propriety of putting speedily upon the market a volume which may enter into competition with American perfection on this head!

History.

Teachers who want a short and cheap handbook to put into their scholars' hands *àpropos* of the King Alfred Millenary cannot do better than order the requisite number of Mr. F. J. C. Hearnshaw's *Outlines of the Life and Work of King Alfred the Great.* 40 pp. (Henry March Gilbert & Sons, Southampton. 6*d.* net.) It contains maps and copies of coins, and a bibliography as well as a concise account of what is authentic about the King.

We have received from Messrs. Macmillan a *New History Reader* (*Part I. Junior*), 1*s.* 6*d.*, which appears to be the inner circle of a new series "on the concentric plan." In its iv. + 236 pages it ranges from the beginning to the (so far) end of English history, and contains many good illustrations. We cannot, of course, judge the merits till we see the outer circles. It is accompanied with a summary (32 pp., 3*d.*).

In *Stories about Alfred the King and his Angle-Land*, in three parts (63 + 64 + 64 pp.), (Chapman & Hall), 6*d.* each part, Mr. A. H. Wall gives his imagination play, and using all stories, authentic and other, produces a tale that will probably prove interesting. Each part is illustrated with coloured pictures. In the same series (The Young People's Library), Mr. G. A. Henty has written a short story, *John Hawke's Fortune* (63 pp.), about the rebellion of Monmouth. We hope ordinary folk are not expected to talk such well-balanced sentences as Mr. Henty's characters use.

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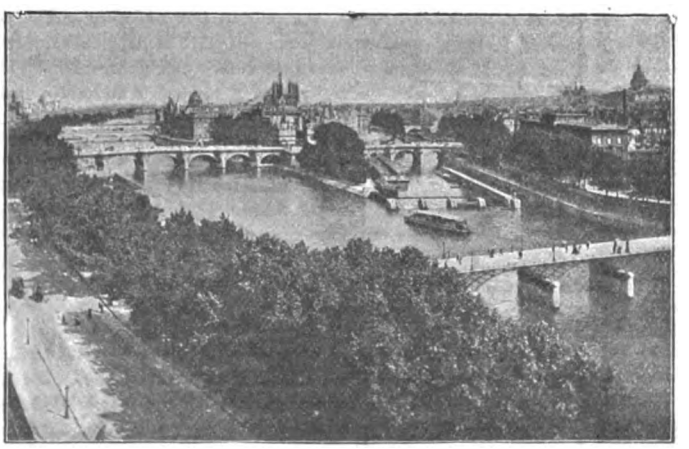
Geography.

Physical Map of the World. (*On Mercator's Projection.*) Size, 4 ft. 3 ins. × 3 ft. 6 ins. (W. & A. K. Johnston.) *Part of the Dominion of Canada.* Size, 4 ft. 3 ins. × 3 ft. 6 ins. (W. & A. K. Johnston.) 12*s.* each.—Accompanying each of these maps is a Handbook which teachers should find of service in preparing geography lessons upon them. A completely satisfactory physical wall-map of the world is very difficult to produce, and though Messrs. Johnston's compares favourably with any existing map of like dimensions, it possesses defects inseparable from the attempt to represent orographical features and at the same time to designate them. In our opinion, names should be entirely omitted from physical wall-maps of the world; they spoil the appearance of the map, interfere with the representation of orographical characteristics, and are quite unnecessary. The letters are too small to be read by a class, and the teacher who requires the names ought not to be giving instruction in physical geography. The object of a physical map is to present a view of the comparative elevations and depressions of various parts of the earth and sea, and anything that tends to obscure this bird's-eye view should be cleared away. Even with hand-maps or atlases, we prefer them to be without names when physical features are represented, and wall-maps of physical geography are far better without them. Putting this aside, we have no hesitation in expressing the opinion that a good teacher will be able to make the physical map under notice the basis of instructive lessons on the influence of land elevation upon geography and history. Six gradations of colour are used to represent elevations from sea level up to 5,000 feet and above, and seven to show depths down to 3,000 fathoms and below. Ocean currents are, of course, shown upon the map. The wall-map, *Part of the Dominion of Canada*, comprises Ontario, Quebec, Nova Scotia, New Brunswick, Prince Edward Island and Manitoba. It is a pity that Ontario and Quebec are drawn to one scale, Manitoba to another, and the other provinces to a third. The misconceptions a boy is thereby likely to develop are, however, to some extent guarded against by a small inset-map of the whole Dominion. The map, which is a political one, is very clearly printed, and in this respect leaves nothing to be desired.

Europe. (*Pictorial Geographical Readers.*) Thirty-seven illustrations and twenty-six maps. 219 pp. (Longmans.) 1*s.* 6*d.*—



Panorama of the City of Paris.

The illustrations in this reader are very well executed. The one that we reproduce is from Lesson 23, "My first Visit to Paris." This is given in the form of a dialogue between two boys. Some of the other lessons appear as adaptations of accounts of travels. On the whole, this is an improvement on most readers now in use; at the end there is a summary of the lessons with maps printed in colours.

Mathematics.

Arithmetic. By R. Hargreaves, M.A. viii. + 416 pp. (Clarendon Press.) 4*s.* 6*d.*—In two respects, at least, this book is unusually good; attention is paid to really economical methods of computation, and the treatment of approximate calculations is sound. The text, which contains much interesting matter, both theoretical and practical, will probably appeal to the teacher rather than to the pupil; but this will not prevent the use of the book as a class book in schools. It would be an advantage, in another edition, to print the tables and formulæ of mensuration separately at the beginning (or end) of the volume; and the theory of fractions might be profitably illustrated by diagrams. A trial of Mr. Hargreaves' book may be recommended.

Geometrical Exercises from Nixon's "Euclid Revised." With solutions by A. Larmor, M.A. viii. + 170 pp. (Clarendon Press.) 3*s.* 6*d.*—The absence of figures and the conciseness of the proofs (often given in outline only) make this work as little like a "crib" as it is possible for a book of the kind to be; and if it is used judiciously it will be profitable to teachers and students alike. The solutions are very elegant, and some of the articles (*e.g.*, p. 72 and p. 150) treat of certain classical propositions with great freshness and skill.

The "Junior" Euclid. Books III. and IV. By S. W. Finn, M.A. vi. + 145-344 pp. (Clarendon Press.) 2*s.*—Besides Euclid's propositions we have what is now the usual supplement relating to inversion, coaxal circles, the principal associated circles of a triangle, and so on. There is a useful introduction to Book IV.; and, best of all, a collection of really easy and well-graduated riders. We do not like the very thick lines used in many of the figures to show the data, and should prefer a more restrained use of abbreviations; but these are matters of taste, and the edition may be recommended as being likely to prove a very satisfactory text-book.

On Teaching Geometry. By Florence Milner. 18 pp. (D. C. Heath & Co.) 6*d.*—The main object of this essay is to advocate the expansion of geometrical proofs into a syllogistic form, a proposal with which we entirely disagree. Miss Milner is so enamoured of the syllogistic idea as to assert that "if this method is used in conventional and formal demonstration, it becomes of greatest value in original work." Nothing could be further from the truth; induction, and what Jacobi calls "glückliche Divination," are the mathematician's instruments of research. And in teaching geometry, the result of laying too much emphasis, at an early stage, upon its logical aspects generally results in dulling the interest of the student, or even filling him with disgust. We have failed to see anything of real novelty or interest in this disappointing tract.

Deductions in Euclid. By T. W. Edmondson, M.A. 206 pp. (W. B. Clive.) 2*s.* 6*d.*—A judicious selection of riders on Euclid I.-IV., with neat demonstrations and clear figures. For students working by themselves a book of this kind is doubtless useful; but it must be remembered that it is only when deductions are worked out by the student himself that he is deriving proper benefit from them.

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Plane and Solid Geometry. By A. Schultze, Ph.D., and F. L. Sevenoak, A.M., M.D. xii.+370 pp. (The Macmillan Co.) 6*s.*—The distinguishing feature of this treatise is the extent to which it calls upon the thinking powers of the student. Thus, in the main sequence of propositions, sometimes a part, sometimes the whole of a demonstration, is left to the reader. On the other hand, figures are frequently supplied to the exercises. Proportion is treated by passing from the case of commensurables to that of incommensurables. A good deal of attention is given to what may be called geometrical arithmetic, and the section on solid geometry includes most of the elementary properties of circles and triangles on a sphere. The diagrams are excellent; and the book seems altogether attractive and likely to interest and stimulate a capable student. On p. 205 the authors endeavour to prove that the circumference of a circle is less than the perimeter of any enveloping line; the delusion that this is possible seems to have become a fixed idea on the other side of the Atlantic.

Euclid's Elements of Geometry. Books I.-IV., VI. and *XI.* By C. Smith, M.A., and Sophie Bryant, D.Sc. viii.+460 pp. (Macmillan.) 4*s.* 6*d.*—In this edition Euclid's proofs of his propositions on the contact of circles are replaced by others which are more satisfactory, and instead of Book V. we have a series of propositions in proportion proved in the Euclidean manner for the case when the quantities concerned are either rectilineal segments or areas. This way of dealing with proportion is an interesting experiment, and deserves the attention of teachers. The supplement to Book VI. gives excellent proofs of an unusually large number of classical propositions, including, for example, Feuerbach's theorem and the polygons of Poncelet. As we have had occasion to say before, the statement (p. 265) about regular polygons which can be drawn with rule and compass is incomplete, and on p. 290 we have the remarkable statement that "Euclid's definition that 'magnitudes are said to have a ratio to one another when the less can be multiplied so as to exceed the greater' is only an indirect way of stating that two magnitudes have a ratio when, and only when, they are of the *same kind.*" This curious misinterpretation of Archimedes' axiom indicates that the authors are quite unfamiliar with the rigorous theory of geometrical measurement. Again, they dismiss the theory of parallels without any reference to the possibility of non-Euclidean hypotheses. Surely they might be indicated, even in an elementary book. However, for practical purposes, as understood in this country, the edition will doubtless prove very acceptable.

Miscellaneous.

Our Public Schools: their influence on English History. Charterhouse, Eton, Harrow, Merchant Taylors', Rugby, St. Paul's, Westminster, Winchester. By J. Cotton Minchin. (Swan Sonnenschein.) 6*s.*—This book contains a short sketch of the history of each school, together with the names and notable deeds of the most distinguished old boys. It is impossible to be dull, so it would seem, when writing on such a subject. Certainly Mr. Minchin is never dull. His anecdotes and allusions are endless, if a trifle incoherent, and it is difficult to put the book down. Old boys will be delighted with it; though, if we mistake not, each will find some mistakes in his own particular section. Historically the book cannot be wholly trusted. The sub-title also is inaccurate. What Mr. Minchin shows is the influence of public-school men on English history, or rather the number of them who have helped to make English history. When he comes to estimate the effect of the public-school education upon them, he is quite at sea. He will not admit that the schools have a tendency to revive the methods of Procrustes; everything is rose-colour, the boys could not be better or better taught, and the headmasters, "ably seconded by their assistants," are equal to any who ever lived. Yet these things are not so. With this warning, we can recommend the book to those who want a perennial entertainment.

Tales of the Birds. By W. Warde Fowler. 239 pp. (Macmillan.) 1*s.* 6*d.*—A beautifully printed, beautifully illustrated, absolutely delightful book. Mr. Warde Fowler is already known by one volume which has established his familiarity with birds and their ways. This second venture of his will carry him far into the affections of children. Nine stories are included in this book, and they are all eminently readable, and all adapted to children who are just "growing up." They make good literature as well as good stories, and are the evident result of a deep love for bird life under a great variety of conditions. They would be admirably serviceable if used as a reading book in junior forms; in rural districts also this volume would be a valuable gift or prize book.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Latin as a Mental Training.

MR. HIGGS tells us that the hour a day spent on learning Latin is wasted for one who is to go into business, because it does not enable him to get ahead of his competitors, and is of no use in the routine of an office. Yet he grants that it is "a capital training, strengthens the memory, puts a keen edge on the intellect, brings forth the power of perseverance under difficulties."

Is memory of no use to a business man? If his memory is strengthened, will he not learn French and German words better, prices current, his customers' needs?

Is a keen intellect of no use to him? Will he not master the intricacies of French and German syntax better, and be able to produce a better commercial letter? Will he not be better able to "get ahead of his competitors" by devising improvements and doing his work better?

Is power of perseverance of no use to a business man, even in the routine of the office?

Now I will put a question or two to Mr. Higgs. What is the use of dumbells or the parallel bar, of running and boxing, in the routine of the office? Do commercial men get ahead of their competitors with their legs or fists? Yet these things make their bodies healthy and strong, and so enable them to persevere in the routine of the office, and get ahead of their competitors. So Latin makes their intellectual powers stronger and truer.

Those who decry Latin do not usually grant that it is a good training; Mr. Higgs does, and yet decries it.

If anyone maintains that Latin is of no use as a mental training, I am ready to try a fall with him.

W. H. D. ROUSE.

Rugby,
August 1st.

MR. HIGGS will no doubt raise a hornet's nest about his ears by his derogatory remarks on the value of Latin teaching in secondary schools. May I be allowed to furnish him with one or two reasons for the continuance of this venerable subject? (1) Most form-masters know nothing, and care to know nothing, about any other tongue—not excluding their own. (2) The

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dropping of Latin from school curricula would be a distinct menace to the church militant here on earth. (3) It is a language rich in a noble literature—nobler than all other languages—except English. (4) It affords splendid mental gymnastics; look at its inflexions! Why not even German or Old English has such a wealth of inflexions. (5) How can you teach "science" to a boy who does not know Latin? (6) Cease to teach Latin and you will cease to produce statesmen. (7) It is not part of the schoolmaster's duty to provide a boy with a training calculated to fit him for commercial life. Bother foreign competition. Are we not able to live on our capital? Mr. Higgs will want us to teach geography next!

E. W. HURST.

Nonconformist Grammar School,
Bishop's Stortford.

The Market Value of Commercial Education.

THE subject raised by the Headmaster of Fettes College, to which you referred in the Scottish notes of your August issue, seems to me of paramount importance just now. Your own columns bear abundant testimony to the earnest efforts being made in all parts of the country to provide a really practical and efficacious supply of "commercial education." In response to the loud and oft-repeated complaints of manufacturers and merchants our school authorities have not only spent considerable sums of money in equipping schools and supplying teachers, but they have devoted much time and energy to the study of continental and other methods of commercial education and to what have been alleged to be the peculiar needs of a trading community. It may be said, moreover, that, judged by the standard of the examinations of different Chambers of Commerce and by the opinions expressed by business men, they have been in a very large measure successful in training numbers of boys in a manner which has fitted them to undertake useful work in distributing centres.

Headmasters and parents naturally supposed that having done this there would be no difficulty in obtaining situations for their boys with a remuneration and with prospects fairly commensurate with the money and time bestowed upon a special form of education. But it would seem that commercial employers of labour are men of great expectations. They want suitably educated employees at the same small salaries they have been in the habit of paying. As you said in your August number, business men must learn not only that education pays, but that it must be paid for. In more than one town it has been found that the tendency is, where commercial schools have been started, for the originally small scale of wages to be still further reduced, because the business man has found that, in the place of one or two adequately-trained youths which he could obtain a few years ago, he can now get a dozen applicants. There is no surer way of "nipping in the bud" this new enthusiasm for commercial education than to depress the market value of properly-trained young men. It is much to be hoped that so strong a public opinion may be developed that the present policy may be discontinued. If British employers of labour alone among the masters of the world adopt the short-sighted policy of sweating, it can cause no thinking man surprise if Great Britain has soon to be content with the third or fourth place in the competition of the nations.

The outspoken address of Dr. Heard deserves serious consideration from our merchants, and if his words are supported by the experiences of other headmasters of public schools there may be some hope of convincing our merchants that what is worth having is worth adequate recompense.

EDWARD STANTON.

August 12th, 1901.

Water Supplies for Rural Schools.

EDUCATION and the divers needs of the children have been very constantly before the public during the last few months, and it has for some time been compulsory that various sanitary matters connected with schools should be properly attended to: but in rural districts one of the greatest needs affecting the health of the children—especially in hot weather—is still entirely neglected. I mean the water supply of schools. To a large number of schools there is no supply at all, and in numerous other instances the only water available is polluted and unfit to drink.

The Local Government Board are not unacquainted with these facts, as will be evident from the recent special reports of their officer, Dr. F. St. George Mivart, on "The General Sanitary Circumstances and Administration of the Axminster Rural District," August, 1899, and "of the Biggleswade Rural District," November, 1899, both inspections having taken place in consequence of severe epidemics of diphtheria or enteric.

Children are thirsty little mortals, and usually the first thing they do on rushing out of school on hot days is to drink copiously from the nearest supply. This is as likely as not to be a filthy ditch or road-side pond, if there is none at the school. Where even this is absent, the children often suffer absolute distress from thirst.

If it were made compulsory to provide wholesome water for village schools, not only would the present principal source of danger to the health of the children be removed, but a stronger inducement would be offered to local authorities to supply the villages at the same time that they were supplying the schools; for where the school is without water, the village is often, though not always, without it also.

It appears as though this important matter were well worthy the consideration of the Board of Education as well as that of the Local Government Board.

CONSTANCE COCHRANE.
(Mem. San. Inst.)

The Downs, St. Neots,
August, 1901.

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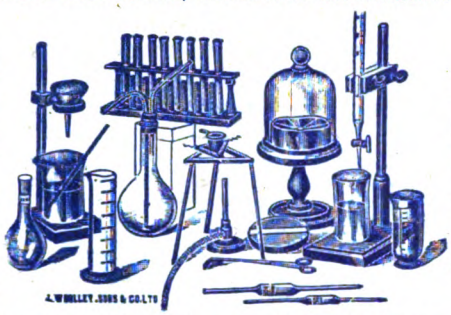

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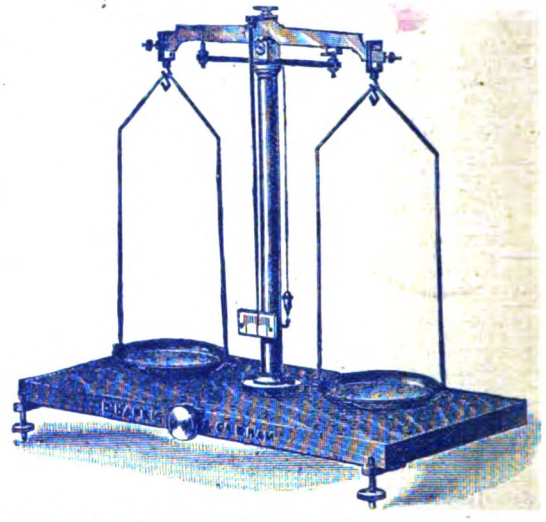

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The School World

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THE CO-ORDINATION OF THE TEACHING OF ELEMENTARY MATHEMATICS AND PHYSICS.

By W. D. EGGAR, M.A.

EVERY teacher must have experienced a feeling akin to despair on finding his pupils lacking in some elementary knowledge which he supposed them to possess, and on which he has reckoned as a foundation for his own course of instruction. It is the common lot of us all. In many cases the deficiency is due to forgetfulness on the part of the pupil. This may be, and no doubt is, annoying, but we cannot help stupidity, and we can relieve our feelings and stimulate a sluggish memory by the counter-irritant "Write it out *n* times," where *n* varies as the square of the irritation. The case becomes different when the fault lies with the elementary teaching given by a preparatory schoolmaster or even by a colleague. Here again we have to deal with the personal element, though the administration of a corrective is a more delicate matter. I do not propose to write a treatise on Stimulus or on Tact; and so I come to a third case in which a teacher finds himself handicapped by what he feels to be a wrong order and an incomplete method in the accepted teaching of another subject. What is he to do?

The teaching of elementary Practical Physics is rapidly becoming universal. At first introduced by Professor Worthington, at Clifton, it spread to primary schools; and by the advocacy of Professor Armstrong and others, practical laboratory work of some description is now regarded as a necessary part of every boy's education. In primary schools the new teaching is altogether beneficial. A little cheap apparatus is bought or made, and the teacher uses it to supplement and explain lessons in arithmetic. Physical measurement falls naturally into its place as an extension and application of mathematics when the same master teaches both subjects, if I may be permitted to use the plural in speaking of what I regard as one. Unfortunately the plural is only too appropriate to the case of the ordinary public school. There mathematics and science are two departments completely separate from each other; and the elementary Practical Physics, which is demanded as the foundation of a boy's scientific training, has to be taught in the physical laboratory and by the science master. This is doubtless quite right and reasonable: but my contention is that the science master finds himself obliged to teach practically a great many things that could be taught more effectively in the mathematical classroom, and to invert the accepted order of mathematical teaching.

This is no new thing. Whenever a boy of average ability, and with an ordinary public-school education, adopts the profession of engineering, he must find that a great deal of what he has learnt as mathematics at school is of no use to him, but that he is lacking in elementary knowledge which is of the utmost importance. Professor Perry has made this clear to all who have read his articles and addresses, not to mention his Course of Six Lectures on Practical Mathematics, and it seems strange that his voice, to the Public Schools and Universities, should have been as of one crying in the wilderness. But many men who have been through the strict course of mathematical training which culminates in the Cambridge Tripos are perhaps inclined to over-estimate its educational value. Never having found any insuperable difficulty in Euclid themselves, they do not realise that it is unsuited to the capacity of many boys under 15 who are not otherwise deficient in intellect. Rightly suspicious of anything that seems like trying to shirk difficulties and go too fast, they object to any interference with the accepted order of subjects. An evil tradition has been started according to which it happens that a boy is never confronted with the notion of ratio and proportion until he reaches the Sixth Book of Euclid, or has waded through seas of factors and fractions which have come in with the tide of examinational requirements. Some of us sigh for the old days of dots and Colenso, when a good teacher imparted sound doctrine of proportion and called it Rule of Three, and the unitary method was unknown. The teacher of physics feels this acutely. He needs the trigonometrical ratios for the teaching of elementary light, magnetism, and electricity: he needs moments and the parallelogram of forces; and his pupils, for the most part, have not begun trigonometry or come within measurable distance of statics and dynamics. He may be pardoned for wishing that mathematicians

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would bring their order of subjects more into line with his own requirements, without making their course less sound or less logical; but he is fully alive to the fact that this cannot be done without considerable change in the schedules of public examinations at the universities and elsewhere.

Can we hope for reform in our present state of muddle in educational matters? I fear not, for many years. The Board of Education has no authority over the Universities or the Civil Service Commissioners. In the matter of elementary mathematics Cambridge is conservative, Oxford indifferent. The Special Commission on Secondary Education appointed in 1895 made no attempt to formulate a code, but confined its attention to questions of organisation. In this, as Dr. Gow pointed out, they sinned both by omission and by commission; for it is the business of bodies like Parliament or the County Councils to settle details of organisation; whereas it must be the duty of experts in education to settle what subjects should be taught. Recent events seem to show that the latter is what must first be done. Until teachers have come to some agreement as to what secondary education is to consist of, it seems futile to put its management into the hands of County Councillors who, for the most part, are uncertain what their own children should learn, and who have no established oracle to whom to seek for advice. Wherefore we may rejoice that a Government, with the strongest majority of modern times, has failed to pass its Education Bill, and hope that its next serious step will be to appoint another Secondary Education Commission whose duty shall be to formulate a code. Of course it is possible, though hardly probable, that the Universities will take the first step in the adaptation of mathematical teaching to modern requirements. But it is clear that until the Government or the Universities alter the requirements of their examinations, the Public Schools are helpless in the matter.

Is there no reform in their methods of teaching Mathematics and Physics that can be made by the schools themselves? I fear that they can do very little in the case of the older boys who have definite examinations before them. We must be content to see many clever boys drawn into the classical net, not on account of inaptitude for mathematics, but because they never get far enough in the subject to appreciate its interest or even its usefulness. Many cultured Englishmen feel and express a profound distaste and contempt for the exact sciences; whereas such a thing is rare among the French or the Germans. The difference can hardly be in the national character. It must lie in the methods of presenting mathematical learning, and I commend it to the thoughtful consideration of our educators. It is an undoubted fact that many of our cleverest scholars leave Oxford[1] without enough mathematical knowledge to help them to understand thoroughly an elementary text-book of physics, much less a treatise on Board of Trade units. But the remedy for defects of this kind does not lie with teachers of mathematics and science, or even with the headmasters. It is a national question, and need not be discussed here.

The more elementary teaching of these subjects in public schools admits of considerable reform, which can be very easily carried out in many cases, provided that the mathematicians are willing to undertake it. Writing as one who has taught both mathematics and physics, I feel that there are many points in the teaching of them which might be improved without in any way interfering with the established curriculum. I hope that mathematicians will bear with me when I suggest that some of the work now done in the laboratory should be transferred to the mathematical class-room, and believe me when I say that the suggestion is made not with the view of decreasing the work of the science-master or increasing that of the mathematical master, but purely in the hope of making the teaching of each more thorough.

To take first the case of mathematics, I believe from my own experience that every teacher must have felt the difficulty of making his pupils see the reason and object of what they are learning. "What is the use of Euclid?" is a question frequently on the lips of the schoolboy. The earnest and obliging teacher may point out the value of geometrical reasoning as a mental gymnastic, while another, more brutal and less conscientious, may say, "There is none; but you've got to learn it." Neither answer is regarded as thoroughly satisfactory by the questioner; but those who have taught geometrical drawing in conjunction with Euclid know that pupils who learn both are far less likely to ask the question than those who are not taught practical geometry. Boys like using compasses and ruler, and are always ready to listen to the mathematical proof of a new construction. Without entering into the question whether or not Euclid should be taught, I wish to record my experience that its rigours are much mitigated by combining it with geometrical drawing, and my belief that a reform of geometrical teaching might be satisfactorily attained by altering Euclid's order so as to bring it into line with the ordinary course of geometrical drawing, and by always teaching the two in conjunction.

Geometrical drawing is not considered as coming within the domain of science; but it bears precisely the same relation to Euclid that is borne to arithmetic and algebra by elementary physical measurement, and it might as reasonably be taught in the physical laboratory. Instead of this, we are beginning to combine it with mathematics, much to the latter's advantage, and with the entire concurrence of the mathematical master, who "finds it a relief." Will he feel still more relieved if the same process is extended to practical arithmetic and algebra? I believe he will, and I think I can give satisfactory reasons for this belief.

[1] Remembering the "Additional Subjects" of the Previous Examination, I refrain from adding Cambridge, though I might possibly do so without contradiction.

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If a subject needs relieving, the teacher must find it dull; how much more, then, the pupils? The latter will give vent to their feelings by questions of the nature of that previously considered. My own experience is that the question, *Cui bono?* comes regularly at certain stages of arithmetic and algebra. In arithmetic it is not very frequent, but it does come sometimes in the teaching of decimals. (It might reasonably be asked in the middle of long exercises on recurring decimals, vulgar fractions, and weights and measures; but there the boys have no suspicion of the uselessness of their labours.) In algebra the question comes at a very early stage, and is repeated again and again until simple problems are reached. It may come again in indices and surds if the boy's spirit is not too much broken by a prolonged course of exercises in what is to him a dead language, the language of algebra unapplied. Now it is at all these stages that the mathematical master needs an answer ready to hand; and in every case the elementary physical laboratory is ready to supply him with one. If he were to glance at the apparatus used there, he would see how much of it might be comfortably stored in his own room, to be brought out when needed in reply to or in anticipation of the dreaded question.

Let us now look at the matter from the point of view of the teacher in the laboratory. Only in a few cases is it possible for boys who learn elementary science to be classified according to their ability in the subject; and if, as is now the case in many schools, it is thought desirable that all the boys in one block (be it Shell, or Remove, or Upper Middle—what's in a name?) should be turned on to some laboratory work which may be paraded as an exercise in the new heuristic method, the exigencies of the school time-table and the smallness of the science staff will certainly require the classification to be the same as for ordinary form subjects. Here is an initial difficulty which the science master is called upon to face. The unevenness of a class means additional labour in the serving out of apparatus and individual attention; but when the actual teaching begins, the boys will be found as a rule only too even in their ignorance of certain matters. The practical use of decimals has an appalling freshness to all of them; and though of course some fall readily enough into the way of guessing the second place of decimals in measuring the length of a sheet of paper with a rule graduated in inches and tenths, yet many take a long time to appreciate the comparative value of the different places and the degree of accuracy of which their measurements are capable. All this means loss of time, which might have been saved if decimals had been taught practically in the mathematical class-room. The same thing occurs in the measurement of area and volume of rectangular sheets and blocks. When it comes to triangles, circles, cylinders and spheres, we have to disguise our algebraic formulæ for fear of the children regarding them as meaningless substitution sums. We of the laboratory are willing to hand over all our blocks and cylinders to the mathematical class-room to be used practically in the teaching of elementary algebra. We all, masters and boys alike, regard measurements of this kind as rather dull operations, which have to be got over before we can proceed to more interesting things; teachers and students of Hall and Knight, chapters I.-IV., would welcome them as a break in the monotony, and a light in the dark places inhabited by *a*, *b* and *c*. Everybody would be benefited, and the teaching would be more thorough. If mathematicians object that there is not enough time for them to do this sort of thing, I would urge that whatever makes a lesson clear is a saving of time, and that more time could be allotted to mathematics if science were relieved of this burden.

I have selected these details of some of the minor evils resulting from our unpractical mathematical course because they can be easily remedied. Schools differ very much in the organisation of their science teaching. Some may be fortunate enough to need no change. But for schools in which boys of 14 come once or twice a week in classical divisions to lectures or laboratory work in elementary physics, I would suggest the following remedies.

(i.) The science hours should be added to the mathematical time-table.

(ii.) The lower mathematical divisions should not come to the laboratory at all, but should learn this elementary measurement as part of their mathematics and under their mathematical master. The less able boys would thus have a chance of learning their mathematics more thoroughly, and of really overcoming the first difficulties of physics.

(iii.) The upper mathematical divisions should come to science in mathematical hours. The classification would suit the physics teaching, and far more effective work could be done. It is absurd to expect good work from a man who has to teach 200 different boys in the course of the week; and, as long as this is regarded as a proper proportion for the science staff in public schools, it is the duty of that staff to uphold the interests of the clever boys, and to resist the theory that everybody should learn science, at any rate from the science master. To show how the stupid boys may learn it as part of their mathematics has been the aim of this article.

The pedagogical value of mathematical instruction, as a whole, depends chiefly on the extent to which it enters into and acts on the pupil's whole field of thought and knowledge. From this truth it follows, to begin with, that mere presentation does not suffice; the aim must be rather to enlist the self-activity of the pupil. Mathematical exercises are essential. Pupils must realise how much they can do by means of mathematics. . . . . A surer road to good results is applied mathematics, provided only the application is made to an object in which interest has already been aroused in other ways.—John Frederick Herbart.

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CLASSICS IN IRISH INTERMEDIATE SCHOOLS.

Hints to Teachers of Middle and Senior Grade Classes.

By W. H. D. Rouse, M.A.

If an examination consists of unseen translation and composition, cramming is of no use when the examiners are wise men. It is not safe to assume that examiners are not wise men, although some are not. Therefore the teacher must not exercise his wits in guessing what passages are likely to be set, but in choosing passages which are characteristic, in such a manner that no side of his authors will remain untouched, and no type of composition is left untried.

To take the translation first. If a pupil is taught wholly by extracts, he finds his work dull. Worse than that, his mind becomes used to scraps and snippets, and is incapable of sustained thought as the reader whose whole library consists of a file of *Tit-Bits*. Equally vicious is the result, that his imagination and feeling hardly come into play at all; his curiosity may be excited, his taste to a certain small degree formed, but his thoughts will not be kept at a high level, nor will his passions be purged by the poet's inspiration. These results, strange as it may seem, will react on his translation of the snippets he will get in his examination; in other words, it pays to do more than the examination seems to require.

Therefore the course for our examination must be so arranged as to include as many complete works as possible in the time, together with typical extracts from others. The boy must get up the speech of Cicero or the section of Thucydides fully, and the school should examine him on it. At the same time he must do every week at least one, and better two, passages of unseen translation, selected by the teacher or taken from a book. These should be as carefully and neatly written as if for the decisive test. The teacher should mark, but not correct, the errors; leaving the pupil to correct himself when the piece is returned. The teacher will find it useful to have a series of symbols; such as a stroke through for a blunder, underlining for something awkward or inadequate, *caret* mark for an omission, *E* in the margin for unidiomatical English, *gr.* for grammar, and so forth. The pupil will then see at a glance what is wrong. After the piece is done, it is useful to put the papers away and spend a quarter of an hour in doing it through *viva voce*.

As regards Books.

If the teacher cannot have his own selections printed, he must fall back on books. Most of these give the reference for each extract, and the teacher can select chiefly those which come from his proper authors. But he will do well not to confine himself to those; because exercises in several styles will give greater facility in dealing with one. The most useful books of unseen translation I have used are the two series of Jerram's "Anglice Reddenda" (Clarendon Press), and for difficult work, Spratt and Pretor's "Translations at Sight" (Rivingtons).[1] A key to the last book is published which will supply models for the teacher; and still better models are to be found in the "Translations" of Jebb, Jackson and Currie (Bell).

So much for the pupil's side; but there is another. It is a common delusion that a subject can be taught by one who knows no more, or little more, than his pupil. General Garfield, it may be remembered, was once a schoolmaster, and he did his work by keeping one lesson ahead of his class. But the truth is, the teacher cannot teach even elementary things well without being a master of his whole subject. Most of us cannot attain to this ideal; but the more we strive towards it the better our work will get. The teacher must be prepared, then, to study for his own sake such books as Sellar's "Virgil" and Verrall's "Studies in Horace"; parts of which he will find directly useful, but far more so the wider outlook and truer judgment which he will attain by studying these. We shall come by and by to details, when it is proposed to suggest a few useful books for each subject.

Turning now to the *Grammar* and *Composition*, the course must be graduated from the elementary stage so as to cover all the ground, and to go a little beyond what is indispensable. For beginners, Abbott's "Via Latina" (Seeley, 3s. 6d.) is excellent, and White's "Beginner's Greek Book" (Ginn) is highly recommended. The pupil should also possess at first for reference, later for systematic work, the "Latin Primer" (or, better, Postgate's "New Latin Primer"), and Abbott and Masfield's "Greek Accidence." Rutherford's "Greek Grammar" is a better book, but not so handy for reference. All paradigms should eventually be learnt by heart, and one example at least for each rule of syntax (*i.e.*, at the words "ablative of instrument," the pupil should at once be able to repeat an example from the syntax). In doing translation or unseen, these examples should be always asked until the pupils all know them without mistake. For higher Latin work, Bradley's "Latin Prose Composition" is indispensable; along with this should be used Champney's and Rendall's "Easy Continuous Latin Prose," and later selected pieces, or one of the books of extracts by Potts ("Passages for Translation into Latin Prose"), Postgate, or Wilkins, or the standard collection, Holden's "Foliorum Centuriæ" (Deighton Bell). The teacher will find Potts's "Hints towards Latin Prose" excellent; while Postgate's "Sermo Latinus" and Ramsay's "Latin Prose," and Meissner's "Latin Phrase

[1] Other books: Reid, "Translations at Sight" (1, Latin; 2, Greek: Isbister). Messrs. Blackie's "Unseens" form a series at 4d. each (3 Greek, and 3 Latin); these appear to be good, but I have not used them myself. More difficult: "Analecta," J. Strachan (Macmillan); Marchant's "Greek Anthology" (Methuen); and Tyrrell's "Anthology of Latin Poetry" (Macmillan); the latter an excellent work with notes, but very wide in range.

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Book" will be found very useful. The same stages in Greek are covered by Sidgwick's excellent "First and Second Prose Writers," which should be supplemented by a book of sentences: say North and Hillard "Greek Prose Composition" (Rivingtons), Arnold, or with a rather wider scope, Rouse and Sing's "Exercises in the Syntax and Idioms of Attic Greek" (Rivingtons). Collections of extracts have been made by Wilkins, and by Holden, as above. The teacher will find much help in Sidgwick's "Lectures on Greek Prose Composition," and in the "Teaching of Composition." Sargent and Dallin have compiled two most useful books, called "Materials and Models for Latin Prose Composition" and for "Greek Prose" (Rivingtons). These give references to passages in the classics on subjects similar to the piece set.

Latin verse should begin with an easy fourth-year book such as Ainger's "Clivus" (Rivingtons), and pass on to the book of Morice (Rivingtons), or Thomas (Rivingtons); Gepp's I have found of no use for the pupils. There are several books professing to teach Greek iambics, but I found them all quite useless for beginners, except Mr. J. H. Williams's "Damon," which is published by Rivingtons. More advanced pupils will find Sidgwick's and Kynaston's both useful. Collections of passages for translation are given by Holden in his "Folia Silvulæ," the standard work. I have attempted to suggest a method of teaching verses after the initial stage in "Demonstrations in Greek Iambic Verse" (Cambridge University Press), and "Demonstrations in Latin Elegiacs" (Clarendon Press).

Lastly, we come to history, on which subject I speak with much diffidence. For young children, a new book called "Little Arthur's History of Greece" is excellent; for the beginnings of serious work, Oman's "Elementary History" (Rivingtons), and later his larger "History of Greece," or better still, Bury's "History of Greece," which is illustrated. Roman History is in a parlous state. For the period we have to deal with (B.C. 133—A.D. 40), Capes's "Periods" will do to begin with, with Liddell's "Rome" for the first part and Bury's "Early Empire" for the second. These books include chapters on literature and art. The teacher will, however, find it necessary to supplement the books by studying and reading out extracts from Mommsen, Grote, and Holm's "Greek History." He will also find it worth while to read out extracts from good translations of the historians, for which suggestions will be given by and by.

(To be continued.)

OF all languages that can be studied with a view to the formal discipline of the mind, Latin is recognised as the best. Many argue that French and German would be just as efficient, but their contention has never been practically demonstrated. The grammar and vocabulary, the spirit and expression, of these languages are too like our own. Translation from, or composition in, a modern language does not compel the same effort of thought as Latin translation or composition.—J. L. Paton.

OUTLINES OF EUROPEAN HISTORY, 1095-1254.

By C. S. FEARENSIDE, M.A.Oxon.

THE Oxford Delegacy for Local Examinations have this year split their former "English" Subjects into two—(*a*) English proper including Grammar and Literature, and (*b*) History and Geography; and one of the alternatives under the latter heading, for Junior and Senior candidates, is "Outlines of General European History, 1095-1254." This is, I believe, the first appearance of General European History in the syllabus of an English public-school examination; and it has caused some dismay among those who fear the intrusion of "yet another subject" into a crowded time-table. For which dismay there seem to be two cures. One is that the new subject is merely alternative and optional: you can leave it alone if you prefer to keep on the old grind in the dim obscurity of isolated "English History." The other is that the new subject is not quite as new as it seems. It is quite impossible to give sound instruction in English History without some knowledge of General European History: hence the new subject is not quite new to the competent teacher. And boys and girls who have been through their English History have, or ought to have, a pretty good foundation on which to erect the superstructure of General European History: hence the new subject is not quite new to the competently taught.

If a special period is necessary to conciliate the teaching profession, the Delegacy have assuredly done well in choosing a portion of General History which overlaps one of the alternative prescribed portions of English History (1066-1399). That is a small mercy for which the comparative study of syllabuses compels one to be grateful: all the work which the teacher bestows on the European History will "pay" for the English History and *vice versa*.

But how work on these two intertwined subjects to the best advantage? I have not space enough to go into any general survey of the period or to review here the principal points of contact between English and General European History: besides, that has already been well done elsewhere both in some of the books to be mentioned below and also in Mr. Evans's series of articles in the first volume of THE SCHOOL WORLD.[1] I think I shall be most useful if I put aside all questions of *how* to teach and *what*[2] to teach and say something about the best places to search for materials. If I pass over any difficulties which occur to readers of this magazine I shall be pleased to be bombarded with questions.

1 "The Teaching of History," THE SCHOOL WORLD, March (Normans and Angevins), April (Richard and John), May (Dante and the Thirteenth Century), 1899.

2 The Oxford University Press is selling off its stock of old examination papers (originally 1s. each set) at 1s. 9d. the dozen sets. A packet of old "Modern History" papers could supply the teacher with many suggestive questions both in this and future periods. (Clarendon Press Depository, 116, High Street, Oxford.)

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Let us, then, talk mainly about books. There fall to be considered teacher's books and pupil's books; manuals, and larger books; maps, pictures, and light reading; books to have constantly at one's elbow, and books which may be consulted in, or borrowed from, a library. And in considering these various books, one has to bear in mind not only their intrinsic value as history, but also the limitations of the teacher's time and money. Mindful of all these things, and venturing to assume the existence of something like that "five-guinea library of English History" which Mr. Evans and I drew up some time ago for The School World (September, 1899), I propose to try to answer these three questions:—(i.) What books *must* the teacher have for his own use? (ii.) What others may be read with the greatest advantage? (iii.) What books are there suitable to be placed in the hands of the candidates themselves?

(i.) Books for the Teacher's Shelves. It will hardly be excessive to fix as an irreducible minimum a good text-book, a good chronology, and an adequate historical atlas.

(1) *Text-books.* The first is very easy to find: Prof. Tout's "Empire and Papacy," 918-1273 (Rivingtons, 6s. net), is an almost ideal example of a good historical compendium, and each of its well-arranged chapters supplies some guidance for further reading. In fact, that book would render this article quite superfluous were it not for the fact that Prof. Tout is catering for the budding historical specialist, not for the general class-teacher.

(2) *Chronology.* Here there is a choice between three books, each of which has its good points. Taking them in order of price—

(*a*) "An Epitome of History, Ancient, Mediæval and Modern." By Carl Ploetz, translated by W. H. Tillinghast (Blackie, 7s. 6d.). This is probably the most exact of the three, and it has the distinct advantage, for limited purses, of covering the whole of human history in a single volume, at a moderate price. But it is not synoptic, it is excessively German, and it scamps the East Roman Empire.

(*b*) "Handbook of European History, 476-1871." By A. Hassall (Macmillan, 8s. 6d. net). This is well arranged, handy in size, and contains many useful summaries. I know the book only from inspection, not from constant use, which is really the sole way of testing such a book.

(*c*) "Time-Table of Modern History, 400-1875." By M. Morison (Constable, 12s. 6d. net). This is a very recent book.[1] Like Hassall, it is arranged in parallel columns, but it is much further subdivided, and its size is very cumbrous. There are at least two other books of this tabular kind—by G. P. Putnam and S. Willard respectively: of these the former is certainly less satisfactory than any which I have named, and the latter is quite unknown to me. One of the three named may fairly be described as necessary: in choosing between them, it is well to remember that the last-named has plenty of blank space for the user's additions.

(3) *Historical Maps.*—If a good, cheap historical atlas is desired, the choice lies between F. W. Putzger's "Historischer Schul-Atlas" (Velhagen & Klasing, bound, 2 marks, 70 pf.) and E. Rothert's "Karten und Skizzen aus der Geschichte," Band II. (Middle Ages), (Bagel, bound, 4 marks, 50 pf.). The former has given great joy to several teachers to whom I have recommended it; the latter is dearer, but has elucidations. If loose maps are preferred, the excellent maps in Spruner-Menke can be had separately at 1 mk. 20 each; write to Justus Perthes, Gotha, for contents. For an account of available wall-maps of history, see the "Report of the Committee of Seven," pp. 248-254 (Macmillan, 2s. net). The maps in the Historical Atlas which Dr. R. L. Poole is editing for the Clarendon Press cannot be obtained separately; but a well-arranged list can be had on application to Mr. Frowde.

(ii.) Other Books for the Teacher.—The three books so far described will not cost more than a guinea; if anybody feels disposed to spend more, he could not do better than order two books published by Colin, viz., the second volume (1095 to 1270) of the "Histoire Générale," edited by MM. Lavisse and Rambaud (12 francs paper, 16 francs bound) and M. Lavisse's "Vue générale de l'histoire politique de l'Europe" (3 fr.50). The former of these is the standard work on modern history; the latter is an extraordinarily suggestive little essay, to read and digest which could not fail to benefit any teacher's work. Perhaps I may add a word of warning. If anybody spends 4s. 6d. on the sixth volume of Prof. Bury's Gibbon dealing with the period (Methuen, 6s.), he will certainly be tempted into throwing away another 27s. on the remaining six.

As regards books to borrow from a library, I may mention Mr. Bryce's "Holy Roman Empire," Freeman's "Chief Periods of European History," and his "Historical Geography;" Dollinger's well-translated volume of "Studies in European History," Mr. Frederick Harrison's Rede Lecture on the "Byzantine Empire," Mr. Charles Oman's "Art of War in the Middle Ages" (either in the original or in its expanded form), the volume on the "Crusades" by Messrs. Archer and Kingsford, which quaintly appears in the "Story of the Nations Series;" Prof. Jenks's "Law and Politics in the Middle Ages;" a good book on Monasticism (*e.g.*, Montalembert, Eckenstein, or Spence), and the various biographies of men like Anselm, Bernard, Philip Augustus and Saladin mentioned in Prof. Tout's footnotes. I do not suppose that many will have time or inclination to read all these (I regret, or rejoice, to say that many of them are still in store for me), but I mention a few distinctly "best books" in the hope that some may find some, others others, to their liking.

[1] [It will shortly be reviewed in our columns.—Eds.]

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(iii.) Pupil's Books.—This is really the hardest question of all. Do you want a narrative text-book of the usual type which you can put into the hands of your pupils with the reasonable assurance that, if they get it up pretty thoroughly, they will be pretty sure to get through the Local? Or are you tired of pemmican? In the former case, I suppose you want a book more or less like the books used for English or Greek history; a book which deals with your special period is somewhere between 90 and 150 pages, and costs anything from 1s. for a special book up to 5s. for a general book, useful for several years. So far as I know, there is no such book; and I rather doubt whether any bookmaker will be hardy enough to venture on one this year. The nearest approaches to this kind of book produced on this side of the Atlantic seem to be—

(1) "General Sketch of European History." By E. A. Freeman. (Macmillan, 3s. 6d.)

(2) "Outlines of the World's History." (Pt. III., Mediæval History.) By Edgar Sanderson. (Blackie, 1s.)

Each of these devotes about 50 pages to this period, and neither makes a very manageable kind of class-book. The latter is by an industrious and painstaking compiler who pays some attention to social history; the former is a purely political history by a man who was master of his subject, and is a very well packed storehouse of trustworthy facts. Prof. Freeman was a great light at Oxford, and I should think it would be reasonable to anticipate that, in interpreting that charmingly vague term "Outlines," the Oxford examiners would not ask questions about things omitted by Freeman, but would expect rather more—in the case of Seniors, considerably more—than Freeman could give in his limited space. It must be remembered that Freeman's "General Sketch" was designed as a *general* history, not a *special-period* history (a thing which Freeman himself abominated).

Besides these two books, of British manufacture, there are a good many general histories made in the United States which are at least worth consideration. As a rule, they are well put together, contain some teaching helps of various kinds, and are abundantly furnished with maps and pictures; consequently, they cost more money than Freeman or Sanderson, ranging from about 6s. to 12s. As they treat "General History," they can supply for any special period only a slight sketch which each teacher must fill out for himself; this is in many ways an advantage, but it takes some time. And of course they employ spellings which get on some folks' nerves, *e.g.*, "the pilgrims traveled to the Holy Land to pay honor to the Sepulcher of the Savior." Few of these American books are to be found at Cambridge either in the University Library or at the booksellers', and many of them are not kept in stock in thiscountry. Of those that can be had "by return," I can confidently recommend "European History," by G. B. Adams (Macmillan, 6s. 6d. net), and "Outlines of General History," by F. R. Colby (American Text-Book Agency, 7s. 9d.); while Myers' "General History" (Ginn, 6s.) is well spoken of. So, too, is the "Outlines of Universal History," by G. P. Fisher (American Book Co., 2 dollars 40). These are all by University professors, and *ought* to be more trustworthy than the many compilations on the subject.

All the above are outline books which require considerable additions. If a fuller book be desired (which saves trouble, or, in other words, yields poorer results), there are five available school manuals on the Middle Ages which are worth considering.

(*a*) "The Student's Hallam's Middle Ages" (Murray, 7s. 6d.).—This, however excellent when first written, is now antiquated and interesting rather to the historiographer than to the historical beginner. It is also arranged by countries, and consequently not convenient for the study of a special period. Probably this would be best put on one side altogether, though it is a classic in its way.

(*b*) "The Student's Gibbon" (Murray, 2 vols., each 5s.).—This has been recently revised—the second part, which concerns us, by J. G. C. Anderson. Gibbon is a spacious writer who does not lend himself to compression; and I venture to think that he is better as a living companion in the study than that dissected in the schoolroom.

(*c*) "A History of the Middle Ages." By O. Thatcher and F. Schwill (Murray, 9s.).—This is a recent and rather inviting-looking book, furnished with pretty maps, but it deals at enormous length with the first Crusade, and then treats the Eastern Empire with undeserved contempt. I found it extremely unsatisfactory when I was using it some years ago; but the new book by the same authors, specially adapted to English schools, which Mr. Murray announces as nearly ready, may be better.

(*d*) "Mediæval Europe, 800-1300." By Ephraim Emerton (Ginn, 6s. 6d.).—This is the book I should feel most inclined to adopt. It is recent, scholarly, and suggestive, and, like Adams, gives advice as to further reading. But, of course, it is not necessary to adopt any one text-book, and any teacher who does not mind a little extra work (and interest) might adopt several and get the boys to compare notes. If any reader of this paper tries the experiment, I should be glad to hear the results.

Teachers who are attracted by the "Library Method" can hardly do better than adopt the late Mrs. Sheldon Barnes's "Studies in General History," published in this country by Messrs. Isbister (Student's Edition, 6s.; Teacher's Manual, 3s. 6d.). A vast number of good illustrations are given in the first volume of M. Parmentier's "Albums Historiques" (Colin, 16 fr.); and useful collections of sources (translated) are published by Messrs. Bell (Henderson's "Historical Documents of the Middle Ages," "Chronicles of the Crusades," and Wright's "Early Travels in Palestine," each 5s.); and Nutt (Archer's "Crusade of Richard I.," 1s.).

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MODERN EXPERIMENTS IN EDUCATION.

AN opportunity was taken in a former article[1] to direct attention to certain interesting experiments which are being made at Abbotsholme, Bedales and Clayesmore, in the direction of providing the sons of well-to-do parents with an education in which due respect is shown to the individuality of every pupil, while the respective claims of intellectual work, athletic activity, suitable manual labour and æsthetic pursuits are not disregarded. Taking into account the class of society from which the boys of these schools are drawn, it may be said that the distinguishing characteristic of all these institutions is the important part which healthy manual labour is made to take in the education imparted. The headmasters believe with Emerson, "there is virtue yet in the hoe and the spade for learned as well as for unlearned hands."

Just as the progress of science is in direct proportion to the number of well-directed experiments performed by competent hands under the guidance of properly developed brains, so all advances in educational methods are to be traced to wisely arranged trials on the part of experienced and skilful teachers. Hoary antiquity is doubtless venerable, but, unless the methods of the men of old time in our schools be modified by contact with a reasonable radicalism and by the vivifying influences of modern research, they are likely to become obsolete, mummified. In no sphere of human activity, least of all in this work of education, can the man who only knows how to use the tools with which his father was familiar expect to keep abreast of his contemporary who has advanced with the times and steadily assimilated new truths as they have been unfolded.

It has seemed worth while to study the work which is being done in two schools, the headmasters of which have certain definite opinions which they are subjecting to the test of actual everyday experience. One of these is Clacton College, a private school over which Mr. Harold Picton presides, and the other is Keswick School, an endowed school, with the Rev. Cecil Grant as headmaster. Mr. Picton may be said to have identified himself with the work of developing more rational methods of teaching the subjects included in a secondary-school education. Mr. Grant is demonstrating with success the advantages of co-education. It will be most convenient to keep the accounts of these schools separate, and we shall deal with Clacton College first.

Clacton College.

Before summarising the general principles applied in the class-room work of Clacton College it is advisable, since successful teaching is only possible where good discipline and sane administration have been secured, to refer briefly to the aims set before the staff and the steps taken to secure a high, healthy tone among the boys. The school aims at giving an education suitable for those who will afterwards have to direct others. A boy learns to command by practising obedience and by exercising himself in taking his proper share in the corporate life of the community to which he belongs. Consequently at Clacton, in common with all good schools, the greatest importance is attached to laying the foundations of character There is, however, an individuality about the way in which Mr. Picton and his staff try to do this. They believe that "a boy should have perfectly frank companionship with his teachers; he should have no personal fear of them, but he should expect them to carry out the law." Thring's opinion "that boys shall be trusted and be free to do anything that a wise father would wish his sons to do" has been taken as one of the foundation stones in the structure of the school life, and very near to it has been placed that of obedience. Freedom so long as a boy deserves it, or so far as a wise authority allows it, but beyond these limits implicit obedience. To secure an approach to this ideal boys and masters must work together.

An introduction to the more specific duties of citizenship is effected through the school council. Representation is graduated according to responsibility. The lowest form chooses one member who must be selected from the form above it; the highest form elects three members from its own numbers. This council has the right to make recommendations on any matter affecting the school community. The headmaster finds the plan works well, engendering, as it does, the spirit of self-help, and inculcating the habit of submission to a captain elected by the council. All school rules pass before the council, and the large majority have been suggested by it.

Inseparably bound up with such considerations is the important question of discipline. Mr. Picton would distinguish between "punishment," a term which seems to imply some more or less active offence, and "stimulus," a term which implies some incentive to action. The want of care and application sometimes conspicuous in boyhood certainly needs some stimulus for its cure. Mere lecturing and persuading do not prove effective. Detention, sarcasm and, above all, "nagging," are pernicious in their effects; mild corporal stimulus is tonic and satisfactory. This is arranged to follow a certain succession of recorded shortcomings. No idea of "disgrace" attaches to this stimulus; indeed, the idea of disgrace in such discipline is one which would never occur to the boy but for false sentiments introduced into children by adults. Where a boy is made industrious, faults of behaviour, Mr. Picton finds, are rare, and the need for "punishment" almost disappears. When such need does occur it is of the first importance to regard the punishment as an atonement, not a disgrace. The disgrace, if any, is in the offence. The system adopted is far from encouraging resentment and has been ratified in its present form by the school council.

[1] The School World, June, 1900.

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The newer and more rational methods are used in all mental training. The development of the reasoning power and the practical application of the knowledge gained are the main points kept in view. It is constantly borne in mind that a teacher should never arrive at finality, and every master is encouraged to build up his system on the methods of others and his own research. It is a little difficult, within the limits of a single article, to describe the way in which each subject is taught, but it may be helpful to indicate in a general way the tendencies which mark the instruction in some of the chief subjects.

Science is taught, especially at first, by the "heuristic" method, and is used throughout the school as the chief instrument for training observation and reasoning. It is treated simply in its relationship to a general education. No attempt is made to teach a boy a great mass of facts, but he is taught to organise his common sense. Nature-study is given great attention, especially in the lower part of the school. The teacher avoids being too systematic; he decides what main generalisations he wishes the boys to grasp and disregards the order in which they may be reached. The life about the school, the boys' pets and the boys' "finds," are often made the subjects of lessons. For instance, when the boys brought home bones, Mr. Picton made them the text of a few lessons on comparative osteology; when, in the summer, insect life was popular with the boys, he gave lessons on entomology and the classification of insects; when, in the social life of the school, questions came up as to the names of wild flowers, he devoted the science lessons to botanical classification. In other words, the idea that cubic centimetres and grams make science is continually combated, and the more sensible notion, that it is the cultivation of the power of observation and the combination of observations by the imagination, which may incidentally mean the use of numbers, is always kept to the front. So, too, in the teaching of mathematics, there is no slavish devotion to Euclidean methods and other formal demonstrations of the ordinary text-book. Preliminary conceptions are introduced in a concrete fashion. Beginners work out monetary problems with paper money, and the latter work is made, so far as possible, to appeal to a sense of practical utility. Boys find out the fundamental properties of the simpler geometrical figures by measurement, and work out easy problems and theorems by using the compass and protractor. Abbreviated methods and limits of accuracy are early dwelt upon, and the advantages of algebra are brought out by applying its rules in the science lessons. Arithmetic is treated as essentially a practical subject. A test too often unsatisfied is that a boy leaving school at, say, 18 should, however great his other attainments, be able to add up money both rapidly and correctly.

In studying French the pupils are encouraged to speak the language from the very first. The conversation is guided round some theme, as in Hölzel's pictures, but, in addition to this, untrammelled talk, leading as it does to an appreciation of the difference of idiom, is used on some occasions. Sometimes at table, too, French alone is permitted, when the French master who is present clears up difficulties as they arise.

Perhaps the chief part of the instruction in the mother tongue is the lessons in literature. Here the primary object of the teacher is to develop an interest in the selected piece as literature. But necessary guidance in grammar and composition is given throughout the course. Geography in Mr. Picton's hands is not mere topography. The memorising of the names of places is reduced to a minimum. The subject is commenced by the construction of plans, and passes on to the reading of maps and a study of simple physical geography. The reasons for physical conformation are always kept in view, and the boys are led to work out the relationship between physical features and commercial facts. Here, for instance, is a part of an actual lesson:—

"What change do you notice," the master asks, "in the scenery as you get north to Caithness? Tell me from your maps." "The scenery is less hilly; we get on to lower ground." "Is there any change in the rocks?" "Yes, they are newer rocks." "What effect, do you think, that will have?" "Well, the ground would be more fertile." "What effect would that have on the population?" "I should expect the place to be more populated." "Turn to your population map and see if you are right." In this class the boys have got beyond the preliminary stages and have learned to draw some information out of maps, and to reason a little about geographical facts.

Similarly in history every opportunity is taken to make the lessons as real as possible. For instance, facsimiles of MSS. are shown, and much attention is given to the manners, customs, dress and daily life of the periods under study.

Latin is retained as a school subject, and this for a variety of reasons; its study assists in the proper use of the mother tongue. Even a small knowledge of Latin serves as a key to the meaning of a great many English words, and the ordinary concords supply an admirable training in linguistic accuracy. Moreover, Latin is usually required for professional entrance examinations, and boys are handicapped if the subject is begun too late.

Such, briefly, are the main tendencies in the teaching at Clacton College. The sketch is inadequate, but enough has been written to show that an earnest attempt is being made to rationalise the instruction, and though it is early to form an idea of the success of the school, there are abundant indications that its staff will succeed eventually in systematising the newer methods of instruction they have adopted.

In conclusion, the form taken by the terminal report deserves some attention. Besides a special report on the studies of the school, there is a general one concerned with character, physique and recreation, and mental powers. Though there is a tendency to err on the side of over-elaborateness, there is no doubt that, provided the eight

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headings under "character" and the seven under "mental powers" were honestly filled up by a careful schoolmaster, parents would be in possession of all the information necessary to enable them to decide upon the best career for their sons and to form an accurate estimate of their character and powers.

SIMPLE APPARATUS FOR PRACTICAL WORK IN MAGNETISM AND ELECTRICITY.

By H. E. Hadley, B.Sc.(Lond.)
Associate of the Royal College of Science, London.

THE following descriptions of simple pieces of apparatus are intended only as examples of what a teacher with some manipulative experience can do in the way of arranging, even with little equipment, laboratory work for students. In addition to the small cost at which apparatus of this kind can be produced, there is a further advantage attached to its use, since students more easily understand the principle of its construction and learn the all-important lesson of utilising simple appliances in their scientific investigations.

A Simple Magnetoscope.

Select a glass tube about 20 cms. long and 2 cms. internal diameter. Bore a hole through a flat cork, the hole being sufficiently wide to serve

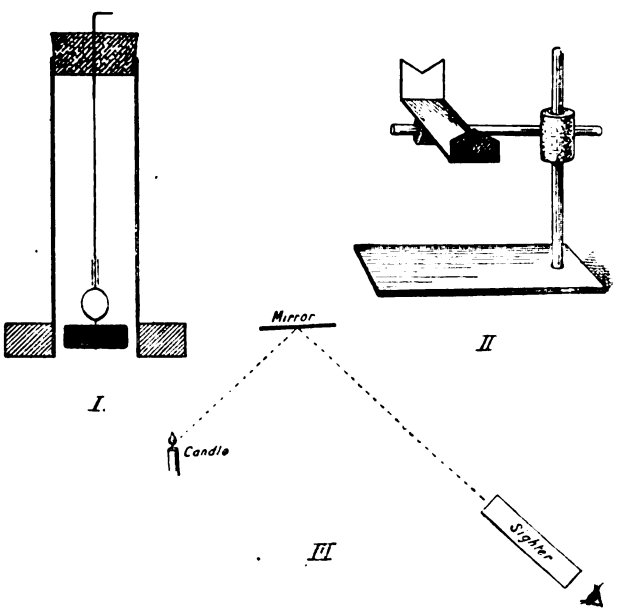

Fig. 1.—(I.) Magnetoscope; (II.) "Sighter," for keeping the line of sight constant; (III.) method of taking observations.

as a stand in which the tube may be fixed. Fit a cork into the upper end of the tube, and insert a short length of stout copper or brass wire, bent at right angles, through the cork (Fig. 1, *I.*). Break off a short length (about 1·5 cms. long) of a rat-tail file and magnetise it strongly. Tightly twist a short length of copper wire round this magnet, having a free end of wire about 2 cms. long. Now suspend the magnet by means of a silk fibre attached to the wire at the top of the tube. Attach four silvered microscope-cover glasses to the copper wire in the positions shown, so that either one of the mirrors will be in a convenient position from which to reflect a beam of light, and in this manner to determine with fair accuracy the time occupied by any observed number of swings. Fig. 1, *II.*, represents a simple form of "sighter" which can be made with glass rods, corks and cardboard; this ensures that the eye of the observer shall occupy the same position during the period of an experiment. A Price's night-light standing in a shallow glass vessel is a convenient source of light.

Comparison of the Magnetic Intensity at Different Points of a Laboratory.

The rate at which a compass needle swings to and fro depends upon the magnitude of the magnetic *force* acting upon its poles. The rate of swing can accordingly be used as a method for comparing the magnetic force acting on the poles in various localities. Moreover,

$$\begin{matrix}\text{Force acting on the pole of compass needle} & = & \text{Horizontal intensity of field} & \times & \text{Pole-strength of needle}\end{matrix}$$

$$\text{or } F = H \times m.$$

If n denotes the number of swings occurring in any given time, it may be proved that F varies directly as n^2.

Hence $$\frac{F_1}{F_2} = \frac{n_1^2}{n_2^2},$$

but $$\frac{F_1}{F_2} = \frac{H_1 \times m}{H_2 \times m} = \frac{H_1}{H_2}.$$

Therefore $$\frac{H_1}{H_2} = \frac{n_1^2}{n_2^2}.$$

(i.) Place the magnetoscope (Fig. 1) on the bench and bring the magnet to rest. Note which mirror is most convenient to use, and place a candle flame a short distance away and at a considerable angle to the normal. Place the "sighter" so as to observe the beam of light along the line joining the two V-shaped points. Set the magnet vibrating by bringing another magnet near to it for a moment. Note the time when the beam of light is observed to traverse the line of sight, and carefully count the number of subsequent passages in the same direction until twenty complete oscillations have been described (*i.e.*, until the beam traverses the line of sight for the twenty-first time). Calculate the number of oscillations which would be described in one minute. Call this number n_1. Repeat the observation at some other point of the room, and calculate the number of oscillations, n_2, described in one minute. Then —

$$I_1 : I_2 :: n_1^2 : n_2^2.$$

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COMPARISON OF THE MOMENTS OF TWO MAGNETS BY THE METHOD OF VIBRATIONS.

Box for Vibration Experiments.—(i.) Make a wooden box (18 cms. × 11 × 8½), leaving the ends open. Select a piece of glass tube (28 cms. long, and 2 cms. diameter), and bore a circular hole in the centre of the top of the box, of sufficient diameter to enable the glass tube to be fixed in firmly with cement. Fit a cork into the top of the tube; pass a short piece of stiff brass wire through the cork, and bend the upper end of the wire at right angles to enable the wire to be adjusted. Solder to the lower end of the wire a length of copper tinsel, terminating in a wire hook from which the magnet may be suspended. Make a light stirrup of thin copper foil, and fix to its under surface a narrow strip of aluminium foil (16 cms. long), the extreme ends of which are bent at right angles. Cut two pieces of glass of sufficient size to close the ends of the box (¼-plate negative glasses are convenient); fix the glass ends in position by means of elastic bands or by soft wax. Attach a narrow strip of paper down the middle of each glass plate (Fig. 2).

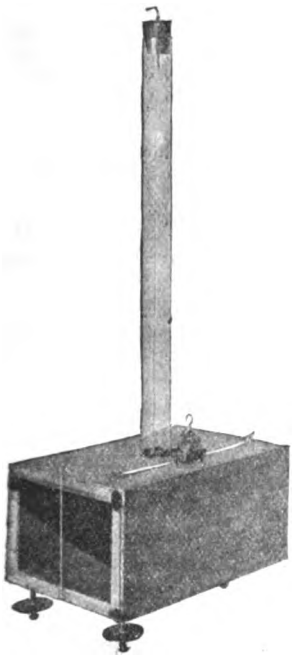

FIG. 2.—Box for determining vibration periods of magnets.

If the magnet is sufficiently light it should be suspended by means of a silk fibre, and the stirrup should be as light as possible. Copper tinsel will be found necessary in the case of heavy magnets.

A simpler apparatus (Fig. 3) for carrying out the same experiments may be arranged by means of a glass crystallising dish and sheet of paper. Fix two narrow (1 mm. wide) strips of white paper vertically to the sides of the dish and at opposite ends of a diameter. Also fix a similar piece of thin paper to the vertical end-face of the magnet. Suspend the magnet inside the dish. Cut a circular hole (2 cms. diameter) in a piece of paper, and slit the paper in any one direction from the hole to the edge so as to enable the paper to be placed over the dish without disturbing the magnet. Move the dish round until the diameter joining the strips of paper is in the magnetic meridian.

If a magnet is swinging freely, the time of one complete oscillation is given by the formula:

$$t = 2\pi\sqrt{\frac{I}{MH}}, \text{ or } MH = \frac{4\pi^2 I}{t^2},$$

(where I = the Moment of Inertia, which can be calculated from the weight and dimensions of the magnet).

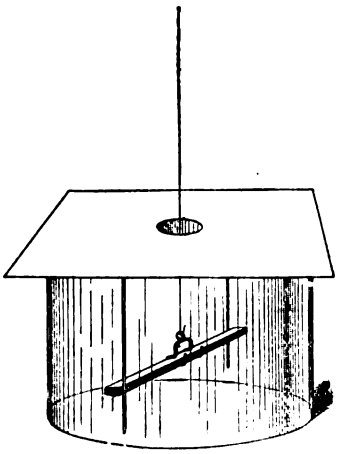

FIG. 3.—Alternative method of suspending magnet.

Carefully measure the dimensions and weights of the two magnets, and calculate their Moments of Inertia (I_1 and I_2). Determine the times occupied by one complete oscillation (t_1 and t_2).

Then $$M_A H = \frac{4\pi^2 I_1}{t_1^2},$$

and $$M_B H = \frac{4\pi^2 I_2}{t_2^2},$$

or, $$\frac{M_A}{M_B} = \frac{I_1}{t_1^2} \times \frac{t_2^2}{I_2}.$$

Tabulate your observations in the following manner:—

Moments of Inertia.	Time of one Complete Vibration.	$\frac{I_1}{t_1^2} \times \frac{t_2^2}{I_2}$.
Magnet A:—		
Magnet B:—		

CHEMICAL EFFECTS OF AN ELECTROSTATIC DISCHARGE.

Boiling tube to show Chemical Effect.—Cut two pieces of thin platinum wire (each about 4 cms. long) and solder to the ends pieces of copper wire. Cut two pieces of narrow glass tubing (about 15 cms. long), and draw out one end of each piece to a capillary tube. Fuse the platinum wires into the capillary ends of the tubes, and cut off the ends of the wires as close to the glass as possible. Bend the ends of the glass tubes to a right angle. It is now necessary to grind the ends of the wires on glass with wet emery powder, so that only cross-sections of the wires are exposed. Mount the glass tubes in a cork, as shown in Fig. 4, and partly fill the boiling tube with water acidulated with sulphuric acid.

Connect one of the wires leading from the

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boiling-tube to a terminal of the Wimshurst machine. Connect the other terminal to the inner coating of a Leyden jar, standing on the table. Fix an insulated metal knob about 2 or 3 mms. from the knob of the Leyden jar, and connect the insulated knob to the remaining wire of the boiling-tube. Turn the machine steadily, and notice the small stream of bubbles of gas which are liberated at the ends of the platinum wires. Unless a large machine is available, the volume of the liberated gases will be too small to determine their nature (cp. the electrolysis of water, by means of a voltaic current).

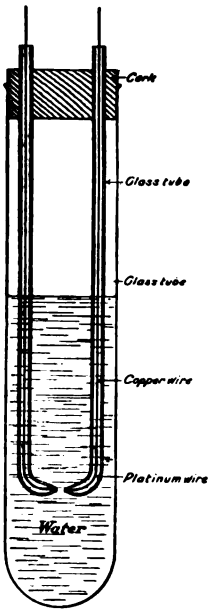

Fig. 4.

A Simple Galvanoscope.

Procure a small wooden box, 8 cms. long, 6 cms. wide, and 3 cms. deep (Fig. 5). Remove the ends from the box, cut a transverse slit (4 cms. × 0·5 cm.) across the middle of the lid, and bore a circular hole (1 cm. diameter) in the centre of the bottom of the box; if a suitable box is not available, four pieces of wood may be cut to the required size and glued together. Wind about eight layers of No. 32 cotton-covered copper wire over each end of the box, and afterwards dip the box into melted paraffin-wax. Fix a thin piece of wood to each end-face of the box, to serve as supports for the box, and also for the screw terminals of the coil. Join these terminals to the external

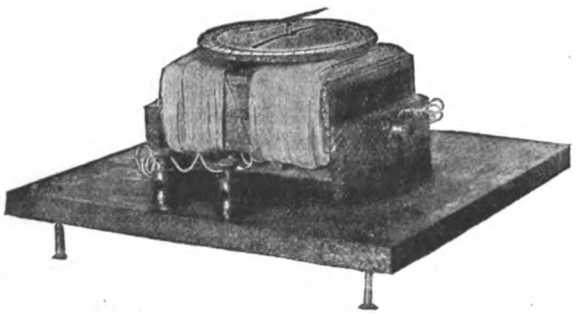

Fig. 5.—A simple galvanoscope.

terminals on the base board by means of copper wires which pass through holes to the under surface of the base board. (These copper wires also serve to rigidly hold the instrument on the base board.) Mount a graduated paper circle (about 6 cms. diameter) on a piece of millboard, and cut away a narrow slit (4 cms. long) along the diameter connecting the 90° readings of the circular scale.

Fig. 6 shows how the needle and pointer may be constructed from two pieces of magnetised clock-spring which are fixed, by means of sealing-wax, to the lower end of a piece of drawn-out glass tubing, to the top of which the glass pointer is attached exactly at right angles to the magnetic axis of the needles. Support this arrangement on a vertical steel needle which is fixed (point upwards) in a cork inserted in the circular hole in the base of the box. Support the base board on three brass screws screwed into its under surface. When the instrument is completed, adjust the verticality of the needle by moving the position of the cork. Protect the needle from air currents by covering the coils with an inverted glass crystallising dish resting on the base board.

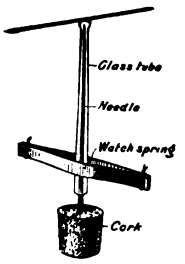

Fig. 6.

A Tangent Galvanometer.

The apparatus really consists of a magnetometer supported horizontally on two vertical uprights in which grooves are cut so as to enable the magnetometer to be supported firmly in a series of different positions in the same horizontal plane. Turn a circular ring of wood (25 cms. diameter), and cut a shallow rectangular groove round its outer edge. Carefully measure the circumference of the groove. Wind four separate layers of double cotton-covered copper wire (No. 22, S.W.G.) round the groove, carefully counting the number

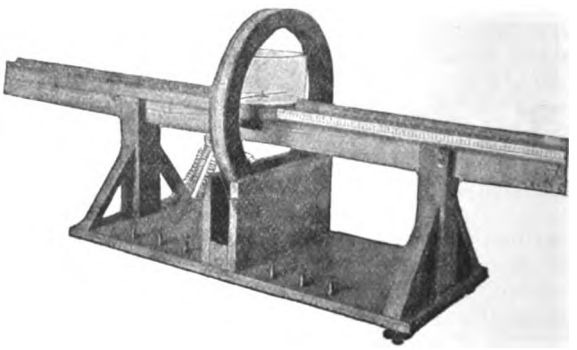

Fig. 7.—A convenient form of tangent galvanometer.

of turns of wire in each layer; it is an advantage to have one coil consisting of only four or five turns of thicker wire; allow the ends of each layer to enter and leave the groove through narrow holes bored through the edge of the ring, in each case the holes being exactly opposite one another, so that each layer contains a known number of *complete* turns of wire. Fix two vertical pieces of wood across the middle of the base board, by means of which the coil of wire may be clamped in position, and accurately adjusted so that the centre of the coils coincides with the horizontal line in which the magnetometer needle is situated. Fasten the ends of the coils to a series of binding screws fixed to the base board, so that the ends of

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coil No. 1 are connected to terminals 1 and 2, the ends of coil No. 2 to terminals 2 and 3, and so on. Support the base board on three levelling screws.

A MIRROR GALVANOMETER.

Mirror Galvanometer[1] (Fig. 8).—Cut two pieces of wood (10 cms. square, and 1·5 cms. thick), and bore a circular hole (2½ cms. diameter) through the centre of each. Coat with paste one side of a piece of foolscap paper (30 cms. × 10 cms.), and lay the paper paste-side downwards on a clean board, and roll it up tightly on a wooden or metal cylinder (of such diameter that the paper tube will fit tightly into the circular holes cut in the pieces of wood). Slide the paper tube off the cylinder, allow it to dry, and then trim the ends so as to obtain a tube 7 cms. long. Fix the pieces of wood to the paper tube and wind on to the tube about ten layers of No. 34 cotton-covered copper wire. Solder the bare ends of the coil to two small pieces of sheet copper, through the centre of each of which a terminal is screwed into the upper edge of one of the wooden faces.

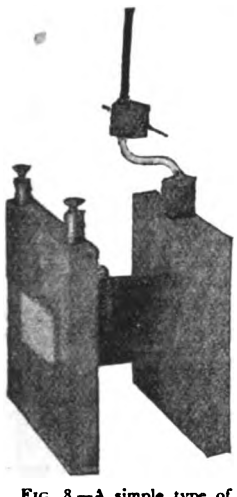

FIG. 8.—A simple type of mirror galvanometer.

Procure a plane galvanometer mirror (half-inch diameter). Cut a disc of aluminium foil (half-inch diameter), leaving three short tongues projecting from the edge, and fix two or three short pieces of magnetised watch-spring to the back of the foil. Place the mirror, glass-side outside, against the foil, and bend the metal tongues round so as to hold the mirror in position. Attach a short piece of single silk fibre by means of shellac to the metal tongue vertically above the magnets.

It is frequently necessary to use a controlling magnetic field. This may be provided by means of a bar-magnet placed on the bench near to the instrument, or by means of the arrangement shown in Fig. 8, in which a piece of strongly magnetised knitting-needle is supported horizontally in a cork which slides up or down a glass rod fixed to the back of the galvanometer.

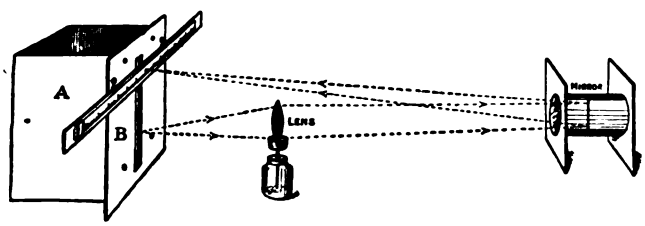

FIG. 9.—Method of observing deflections in a mirror galvanometer.

[1] The details of this instrument are mainly derived from Professor J. A. Fleming's "Magnets and Electric Currents" (E. and F. W. Spon).

Fig. 9 represents a simple arrangement for the lamp and scale. Select a deal packing-box (A), sufficiently large for the lamp to be placed inside, and remove the ends and top. Cut a sheet of stout millboard (B) to the same length and width as the box, cut a narrow slit down the middle of the millboard, and stretch a thin copper wire along the middle of the slit; tack the millboard to the front of the box. Attach a paper centimetre scale to a strip of wood, to the upper edge of which two loops of wire are attached. Support the lens in a slit in a cork, fixed to the top of a glass rod which is supported through the cork of a wide-mouthed bottle.

OXFORD LOCAL EXAMINATIONS, 1901.

Hints from the Examiners' Reports.

IN accordance with our usual practice, we have brought together the most important and far-reaching of the criticisms passed by the Examiners upon the papers of the candidates in the Local Examinations held by the Oxford University Delegacy in July last. Nothing is more calculated to result in a marked improvement than the elimination of widespread weaknesses such as those revealed in the reports of the Examiners at the end of the "Tables supplementary to the Division Lists for the year 1901" which have now been published. The reports upon Senior, Junior and Preliminary candidates are dealt with separately.

SENIOR CANDIDATES.—The *Religious Knowledge* Examiners report that in the papers upon Joshua and Judges the knowledge of detail is more conspicuous than the grasp of the main features and of the chief points of interest. There was some vagueness and confusion as to the main lines of the general historical bearing of the narratives and as to the chief inferences to be drawn from them. Many candidates do not possess an accurate knowledge of St. Matthew as a distinct and separate book. In the papers upon the Epistle the different renderings in the Authorised and Revised versions were omitted by some and done poorly by most.

In *English Grammar* much vagueness was shown in dealing with the auxiliary verbs, and the question on the history of the English language was frequently treated at unnecessary length, while statements of far too sweeping a character were not uncommon.

In *English History* the sixteenth century was rather better known than the fifteenth. General questions, *e.g.*, that on the causes of the Wars of the Roses, were often not well done. In questions requiring criticism or comparison there was conspicuous failure, while the answers to questions demanding facts were too often filled with unimportant details. There is too much tendency to the tabulation of facts, and there is a lack of proportion, intelligence and thoughtfulness.

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In *Geography* the Examiners report that it would be advisable that candidates should be taught to mark the positions of places upon maps with more accuracy than can be obtained by writing a long name across a large tract of country. In a few cases candidates seemed to have learnt various facts by rote without sufficient reference to a map.

In *Latin* many papers showed a remarkable ignorance of the irregular verbs. The chief mistakes in the pass prose consisted in the wrong use of tenses and participles, and in an enormous number of cases of how to express a future passive.

With few exceptions the work in *French Composition* was very unsatisfactory. The spelling was so bad that the words were often distorted out of all recognition. But the most striking feature was the gross carelessness of nearly all candidates. Such mistakes as a *masculine singular* noun qualified by adjectives in the *feminine plural* occurred repeatedly. The teaching of syntax is still very unsound, unsystematic, and based on inferior or old-fashioned books.

In the *Algebra* pass paper a number of candidates showed a curious inability to distinguish *one* from *zero*. In the advanced paper the most striking weakness was the tendency to regard verification in a few special cases as an answer to questions requiring proof of algebraical theorems.

Many of the candidates in *Botany* showed they had not seen simple demonstrations performed—their description clearly indicated that they had only read or heard of them. The answers to the question on wind-systems in the *Physiography* paper showed that nineteen out of twenty candidates were unacquainted with the use of the barometer and the meaning of weather charts. *Practical Chemistry* was, as usual, weak.

Junior Candidates.—In the *English Grammar* papers there was some confusion as to the meaning of the terms "simple," "principal" and "subordinate" as applied to sentences, and the relationship between the sentences in the piece of analysis was often omitted. The candidates had apparently had no teaching in paraphrasing.

The *English History* answers show that the teaching in many centres is of a mechanical character. Over and over again every candidate of a centre repeated *verbatim* the same answer. Teachers apparently rely on obsolete educational methods. Questions designed to elicit independent thoughts on the part of the candidates met with a poor response. Most of the candidates have evidently been made to learn by heart certain facts, and their answers show little variation either in arrangement or diction from a few stereotyped patterns derived either from text-books or from forms of answers drawn up by teachers and committed to memory by pupils.

The chief defects in the unseen translations in the *Latin* papers were (1) incapacity to distinguish between different tenses; (2) slovenly and ungrammatical English. More attention should be given, the Examiners report, to the conjugation of verbs and to the principal tenses of the irregular verbs.

A very weak point that is noticeable in the great majority of the *French* papers is incapacity to render "few," "a few," and "what," used as the subject of an interrogative verb. Many candidates were unable to translate such idioms as "there was," "there was not."

The *Arithmetic* Examiners say the idea that, when one sum of money is expressed as a fraction of another sum, the resulting fraction is also a sum of money was an error of fairly common occurrence. To convert a recurring decimal into a vulgar fraction was beyond the powers of many, and many more who did the essential part of the question correctly and obtained by cancellation the result, $\frac{1}{44}$, gave 44 as their answer. This process was continually repeated in another question also. The failures in the advanced paper were due almost entirely to the extraordinary inaccuracy in the working of the first few questions. The questions that proved the least well done were those relating to the conversion of recurring decimals and to square measure.

In *Algebra*, straightforward "rule" questions were correctly done; but the style in these, as in the problems in fractions, was on the whole unsatisfactory, most candidates using cumbrous processes, and few showing any acquaintance with labour-saving methods. In the advanced paper, the sum of a series in geometrical progression was incorrectly done by most of those who attempted it, owing to a neglect of minus signs. The question relating to the theory of the solution of a quadratic was badly done, and few had a correct knowledge of the Binomial Theorem.

The *Euclid* Examiners call attention to the fact that candidates should base their solutions entirely on Euclid's propositions, and either give references or sufficient reason for their statements to show that they understand them. In the solutions of the easier exercises there was often a tendency to assume geometrical properties of the figures used, the proof of which would have been quite as difficult as or more difficult than the exercises themselves.

Reporting on the *Physiography* papers, the Examiners say a spirit of unreality and bookishness still pervades the candidates' accounts of familiar things, *e.g.*, tidal streams, fog and dew, and leads them to make statements which many of them must be aware are in conflict with their own experience. It is as though they regarded text-book statements (or their own imperfect recollections of them) as necessarily supplanting their own observations—a mistake which can only have arisen from their school lessons having been deficient in appeals to their observing powers. It is to be hoped that this defect will disappear more and more after further extensions of practical and oral methods of teaching.

The great fault revealed by the majority of answers to the questions in *Elementary Science* is that the candidates do not use their reasoning powers. They seem to learn certain definite

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answers to certain definite questions, and they frequently write down these answers, though quite inapplicable to the form in which the questions are asked.

Preliminary Candidates.—The Examiners in *Scripture* draw the attention of teachers to blemishes such as these: omitting capital letters for proper names, even the most sacred; the use of colloquialisms, *e.g.*, "he did a lot of miracles," "Christ must not be bothered," "he who offends these little ones should be chucked into the sea," and so on.

There was in the *English History* answers a tendency to write anecdotes and describe picturesque scenes without much regard to their importance. Teachers of history would do well to remember that in this lesson the pupil has the unequalled opportunity of acquiring the habit of grasping the salient points of a story or situation, if properly directed.

Many candidates in *English Grammar* did not know what was meant by inflexions, and a very large number ascribed voice to nouns. The paraphrasing, on the whole, was not well done. Most of the candidates grasped the meaning of the passage set, but few were able to express themselves in correct English. False concords occurred in almost every exercise. Many candidates did not understand the terms "past tense" and "past participle."

The main fault in the papers on the *English Author* was irrelevance and inattention to the question; often the poems in which names or expressions occur are enumerated when a history of the persons named or an explanation of the expressions cited was demanded.

In the *Arithmetic* paper weakness was shown by many candidates in decimals. In many cases the number of pecks in a bushel was wrongly stated.

In the *Algebra* answers algebraic signs, as usual, especially when affected by the removal of brackets and fractions, were the cause of a very large number of mistakes; and an incorrect and frequent use of the sign $=$ in the solution of equations might also be noticed.

Mistakes in *Euclid* were often attributable rather to poor style than ignorance of the subject, and would largely be avoided if candidates were taught: (*a*) To draw their figures with greater care, and to use capitals only in lettering them. (*b*) To write each "particular" of the assertion and deduction on a separate line, beginning every such line with a capital letter. (*c*) To note carefully that the "conclusion" (as expressed in the last line of the proposition) corresponds accurately with the "requirement" of the proposition (as expressed in the enunciation).

Commenting on the *Botany* papers, the Examiners say: "Improvement would become more marked if teachers would realise that it is far better to let children find out a little for themselves, and do this little thoroughly, than to try to teach them things of which they can have no real knowledge." This remark could be usefully applied to most of the subjects of the examination.

SCHOOL HYGIENE.

THE education of to-day admittedly covers a far wider intellectual area, and involves a much greater subdivision of subjects as well as a greater specialisation of methods than was the case a hundred years ago. But only within the last few decades do we seem to have begun to realise that true education implies the care of physical health no less than the imparting of instruction. Readily as he will admit this fact, the theory of the educationist is in this respect as yet far in advance of his practice. The reason is not far to seek. The revolution of methods stereotyped by long usage is not easy of immediate accomplishment; and it is rendered infinitely more difficult when those methods—or their lack of that quality whose importance is now proclaimed—has been sanctioned by the practice of the most eminent authorities of the past. There is no valid reason, however, why the teaching and the practice of the school should not be such as to influence the life of the home—and so of the community at large—in respect of its physical welfare, as they have influenced it for generations in respect of its intellectual development. Only in proportion as we realise the intimate relationship between good physical health and the power of voluntary control, and therefore of conduct and of character-building, will it be possible effectively to meet the statement that "each generation is cleverer—and weaker—than its predecessor."

The three books on School Hygiene now before us all point the same moral, in terms devoid of anything like hysterical exaggeration; and each adds its quota to the mass of essential facts with which everyone engaged in the care and training of the young should be familiar, though from slightly differing points of view.

Messrs. Hope and Browne's "Manual"[1] scarcely attains the ambition with which the authors seem to have started. The subject, indeed, is far too large and complex to allow of its being treated within some two hundred small pages with anything like the fulness allotted to "The Care of the Eye," which occupies 41 pages with an admirable and very clear *résumé* of this most important subject. There is some confusion, partly due to needless recapitulation, in the 40 pages devoted to "Sickness." In all cases of exposure to infectious illness, disinfection of the person and clothing, &c., should be carried out *at the beginning of* the "quarantine" period, and not at the end thereof, as the writers imply on p. 46; where, too, the duration of infectivity in German measles is given as three weeks, instead of nine, or at the most ten, days.

Four plans are given to illustrate the "General Arrangements of a large Board School." These unfortunately lend themselves to adverse criticism; the relative position of desks and windows is bad

[1] "A Manual of School Hygiene." By E. W. Hope, M.D., and Edgar A. Browne, F.R.C.S. 204 pp. (Cambridge University Press.) 3s. 6d.

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—and quite needlessly so—as these are shown in nearly half the class-rooms, while lavatories and water-closets are depicted as communicating directly with the main building, without the intervention of cross-ventilated lobbies. But the sections dealing with school furniture and writing, games and exercises, and the whole of Chapter XIII. will well repay careful study.

Professor Shaw's "School Hygiene"[1] appears with pages which, in size, paper, and print, are in pleasant keeping with its title. Like the manual already noticed, this book deals exclusively with day schools, including the small village and country schools as well as those larger institutions which in America may be considered to occupy much the same position as the board schools in this country. Here and there one notes features in which American practice and habits contrast with those familiar to ourselves, as, *e.g.*, in the temperature of about 70°F. advised as suitable for the schoolroom air. But these, when they do occur, are of minor moment. In reading these pages one cannot but be struck by the admirable manner in which the whole subject is treated, while each section is made to occupy its proper place in the mental perspective; so that, on a review of the whole, no detail seems to attain an undue prominence. And yet the matter is so well handled and arranged that one closes the book with a feeling of astonishment that information so varied, so detailed, and so full, should have been furnished within the limits of barely 250 pages; and that in a style so easy that the reader is quite unconscious of the winnowing process by which, without obvious compression of the subject, he has been placed in possession of its essentials. The illustrations are clear, original, and to the point. The book is furnished with a full index; and it can be thoroughly recommended for the excellent manner in which it covers the ground with which it attempts to deal.

Dr. Rowe's book[2] is intended as a volume of suggestions to the teacher; and may be read with advantage by the practical student of the anthropology of childhood—provided he already possesses trained knowledge and a discriminating judgment. It is not one to be placed haphazard in the hands of anyone who is merely "interested" in the subject, and who would be likely to display that interest in making experimental investigations on the material at his command without careful and capable supervision. As its title indicates, it deals with the entity of the school child, rather than with the school, and it is quite desirable that this—the individual and directly human—side of the problem should be presented for special consideration.

Dr. Rowe deprecates any intention of implying that all the difficulties encountered by the parent and the teacher are in the realm of the physical: he selects the physical side of the child's nature for investigation "because it is get-at-able and is the source of a far larger amount of psychical deformity than is usually admitted." This is sound common-sense, and in this respect his work is rich in valuable and suggestive hints which should make it a book of reference of real use to the trained teacher, opening out to him a wide field for intelligent investigation, besides providing him with standards whereby he may test his own thoroughness and perspicacity.

We would point out, however, that "the use of plus or minus lenses" to determine the nature of the eye disease which he may have found reason to suspect, is likely to be attended with disastrous consequences in any hands but those of a skilled ophthalmologist, and the advocacy that such tests should be undertaken by the teacher—as advanced from some quarters—deserves a condemnation far more emphatic than the lukewarm criticism which appears on p. 19. The following, again, is an attempt at refinement which strikes one as almost terrible: "Test the temperature sense by having the children pass to the part of the room in which the thermometer is hung with face towards the wall, and tell by their feeling whether it is seventy degrees, above seventy, or below seventy. If above or below, how many degrees?" How much more useful would be a knowledge of the fact that, if the thermometer show a normal temperature, the sensation of undue warmth in a room indicates defective ventilation, while a sense of chilliness may be due to insufficient clothing, commencing illness, or to chronic blood-poisoning from prolonged inspiration of vitiated air? The chapters on Enunciation, Nervousness and Fatigue are full of good things. So is that on Growth and Adolescence, in the course of which Dr. Rowe discusses plainly and helpfully those special dangers which, with a wise courage, he shows are not limited to one sex only. This book also has a useful sectional bibliography as well as a good index.

In summarising these, some of the latest attempts to furnish the school teacher with a guide to the proper observation and care of the pupil, one cannot but be struck by the mass of scientific detail which they represent and codify—on the whole, so usefully. The motto of the modern apostles of health in schools might perhaps be rendered—Air, Light, Freedom. Purity and abundance of air and light are primarily the concern of the designer and the architect. Freedom, in its hygienic aspect, is directly within the control of the teacher. Freedom for nature to work as she always works best and to the best ends—quietly, continuously—making waste and repair balance each other as she goes along, and not alternating periods of exhaustion and so-called "rest"—gradually; and, whenever and for whatever it is worth while, surely. Freedom for physical activity, suitably encouraged, rightly directed, properly trained, never cramped — in striking contrast to the "be good and sit still" doctrine of not so many years ago. Freedom for individual development along those lines of "originality" for which the particular organism is best adapted. Say what we may of the contrast, there is no

[1] "School Hygiene." By Prof. Edward R. Shaw. 255 pp. (Macmillan.) 4s. 6d.
[2] "The Physical Nature of the Child." By Stuart H. Rowe, Ph.D. 207 pp. (Macmillan.) 6s.

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escaping from the conclusion that this way lies our hope of counteracting those degenerative dangers which attend so much of the civilisation we profess to prize.

BRITAIN'S FIRST EMPIRE.[1]

IN these two volumes, for the first time, is presented separately the record of each of the thirteen colonies from its first settlement to the Declaration of Independence. And the authoress has well achieved her aim. Though intended rather for the general reader than for the special student, the work bears the marks of patient and diligent research. It also contains an abundance of real illustrations, a few copies of famous paintings, as well as reproductions of portraits, views of buildings, documents, &c. We can heartily recommend the work to all English readers. It will be useful not only for the mere narration of events, well and forcibly told as that is, but for the wisdom that must surely come by the broadening of our minds. For the history of Britain's first empire, that which was won and lost in the seventeenth and eighteenth centuries, is of profound and permanent interest to us all. It is a history of experiments. From the Plymouth colony, founded by Separatists, with its compulsory non-theocratic character and its absolute religious liberty, to the latest foundation of Georgia, with its ideals of social and religious advance, not one of the thirteen colonies but was the child of a parent idea. To us in this island, with its historic established churches still standing among many dissenting sects, it is a revelation to contemplate the variety of religious ideals embodied in English communities across the Atlantic. Every shade of ecclesiastical opinion was there represented. Roman Catholic Maryland, Puritan New England, Quaker Pennsylvania, Anglican Virginia, all stood side by side, each working out its theory of the universe. And on the lay side of government, it is almost humorous to watch the laboured endeavours of companies and proprietors on this side of the Atlantic, laying down rules for the obedience of their subjects, expecting in some instances to earn a handsome dividend on the money which they had invested in their plantations; in others, *e.g.*, Carolina, hoping to found a Utopia based on scientific principles; in others, again, to obtain supremacy, or at least toleration, for ideas which had failed of realisation in the Old World. While all these, like so many nervous mother hens, were cackling over their broods, the ducklings who had crossed the water went their own way, and that pretty uniformly, finding themselves everywhere in the face of nature in the shape of fertile fields, illimitable space, and North American Indians friendly or otherwise. Those three thousand miles of ocean were a blessed hindrance to too much government fussiness.

And yet, as we read the story of each colony in these volumes, we are astonished how law-abiding these colonists were. Whether they had town meetings, as in New England, or lived their lonely lives on Virginian plantations surrounded like feudal lords by their slave dependents, they submitted quietly enough in general to the "governors" who were sent over from time to time to manage their affairs. But even this law-abidingness was peculiar. Their opposition was based on privileges which they claimed, and their long struggle against government from England thus developed a lawyer-like acuteness which found its culmination in their quasi-legal quarrel with the Parliament of Great Britain and their Declaration of Rights. It is not so clearly understood among us as is desirable that, while the English conflicts of the seventeenth century resulted in the colonies being able to play off one party against the other, and thus to achieve a large measure of practical independence, it was the cessation of these home quarrels in the Revolution of 1688 that began the chapter of differences between Britain and her colonies which led finally to the disruption of the British Empire. For the triumph of Parliament over King led to the attempt of Parliament to govern the Empire in the interests of the commercial classes who were represented at Westminster.

The Navigation Acts sorely hampered the trade of the colonies, and when the period of wholesome neglect was over—the neglect typified by Newcastle's leaving the American despatches unopened in his office—and "colonial" men began to have influence under George III., these Acts were enforced, taxes were imposed, and the opposition of principles thus engendered led to the civil war. Some day the story of that quarrel will be told scientifically, and we shall get to the philosophy of that great quarrel. It has not been told yet, but these volumes of plain, soberly written story will help towards that consummation.

COMPUTATION.

AN inspection of Mr. P. Murray's "Commercial and Civil Service Tot Book"[1]—a good collection of about 1,600 exercises in long and cross tots of the Civil Service type—suggests a few remarks on the use of such tests in an ordinary school-course. The commercial aspect of the question is plain enough: the bulk of practical arithmetic for most of us consists in the casting of accounts, and, whatever may be the career to which a boy looks forward, it is well for him to be able to cast with accuracy and moderate speed. The habit of accuracy is, of course, the

[1] "The Thirteen Colonies." By Helen Ainslie Smith. 2 vols. xii.+442 +viii.+476 pp. (G. P. Putnam's Sons.) 12s.

[1] Belfast: Carswell & Son. 1s.

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great thing; it is a mistake to spend too much time over one kind of calculation merely for the sake of securing great rapidity.

From a more general point of view, tots are an example of exercises in straightforward computation; and this is their main value when considered as part of a mathematical course. In the revolt against a merely mechanical method of teaching arithmetic there is some risk of computation being unduly neglected; especially as, in a certain sense, the best computer is he who does his work in the most mechanical way. The fact is that exercises in sheer calculation serve the same useful purpose in mathematics that the playing of scales does in music; they impart technical facility, and save the student from distraction when he has to attack the theoretical difficulties of a problem.

And, as in the case of music, these technical exercises are best begun at an early age. However much doctrinaires may protest to the contrary, it is certain that young boys can learn their multiplication table and do sums before they can properly appreciate the abstract side of arithmetic, and it is equally certain that this order of procedure is psychologically unobjectionable. The alternatives are either to defer arithmetic until the pupil finds it difficult or impossible to gain technical facility, or else to cram immature minds with bits of theory which they may perhaps reproduce on paper, but do not understand. There is nothing immoral in laying down a rule, the explanation of which is expressly deferred to a later stage: the sin is in omitting the explanation altogether, or glozing over real difficulties and propounding sham demonstrations at a time when the pupil is able to appreciate the truth.

Exercises in computation should, of course, be varied as well as searching; interest and logarithm tables, mensuration formulæ, Horner's method of calculating roots of equations, continued fractions, and so on, may all be drawn upon; and a mathematical boy's appreciation of the theory of these subjects will be all the keener if, when he comes to it, he is familiar with the algorithms which are involved. It is quite easy to make him understand that computation is a means to an end, and not an end in itself; easy, too, to stir his interest by making him verify results of theory, without leading him to confound verification with proof.

Everything possible should be done to encourage a habit of accuracy in calculation: in particular, slovenly "side-work" should be rigorously forbidden. Every mathematical examiner knows how often a candidate persists in crowding up hasty and scribbled calculations into the obscurest corner of the page he can find, with the inevitable result of making a blunder; and a vast number of schoolboys are so incorrigibly careless as to think it a miracle if a sum "comes out" on the first trial. A system of marking like that used to decide the County Cricket Championship would perhaps help to encourage accuracy as distinguished from speed.

EDUCATION AT THE BRITISH ASSOCIATION.

THE inauguration of a Section to deal with educational science gave the recent meeting of the British Association at Glasgow exceptional interest to all who are engaged in the study and application of methods of teaching. The Section was fortunate in being able to secure Sir John Gorst as its first president; and the meetings have been so successful, both as regards attendance and spirited discussion, that the new department of the Association may be regarded as firmly established, and it will doubtless exert a decided influence upon educational work—more especially on the scientific side—of the future.

The Section owes its inception to Dr. H. E. Armstrong, whose crusade against unpractical and unreasonable science instruction has earned for him the gratitude of teachers anxious for intellectual progress, and the inevitable dislike of those peaceable people who like to be left alone to do as their fathers did. Whatever may be thought of the heuristic method so vigorously advocated by Dr. Armstrong matters little now; for the revolution in science teaching to which it has given rise has proceeded too far to admit of interruption. Views which were considered to be impracticable a few years ago are now regarded as educational platiudes; witness, for instance, the remarks upon the power of research made by Sir John Gorst in the address with which he opened the proceedings of the new Section. The fact is, good teachers who have liberty of action always endeavour to educate the intellectual faculties of their pupils whatever the subject of study, and they should welcome all efforts having for their aim the development of the faculties of observation and reasoning.

It will be impossible within the limits of space at our disposal to do more than mention the prominent characteristics of the Glasgow meetings. Only a few papers were read, but these dealt with definite subjects upon which expressions of expert opinion were required; and the discussions were in most cases so well sustained that the system followed in the arrangement of the programme must be pronounced successful. As a compliment to the place of meeting, an afternoon was devoted to the mechanism of education in Scotland, and the organisation of education in Glasgow. The work of general interest began with a paper by Dr. Armstrong on the functions and future work of the Section. In the course of his remarks he stated that the Section would devote itself to the scientific treatment of education in all its branches, and its object would be to introduce scientific conceptions into every sphere of educational activity. "Science" is a word too often supposed by the general public to have a very limited meaning, but Dr. Armstrong said that he understood the word "scientific" to imply a thorough and exact treatment of a subject—a treatment involving full knowledge. Reduced to these terms, the difference between

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scientific and humanistic studies vanishes, and all instruction that results in education merits our regard.

Differences arise, however, when experimental methods come into consideration. Experience of the processes of nature, in the laboratory and in the field, is the gospel of the physical and natural sciences, and they who do not preach and practice it are unworthy apostles. Prof. L. C. Miall stated the case for the experimental method of teaching as a means of training the hand, eye and intellect, and directing to useful purposes the uncontrollable curiosity and activity of the average boy. But it was unnecessary to urge the claims of practical work in science—that may be taken as axiomatic—and the questions to be decided are the character of the work and the constitution of the classes. Simplicity of subject, of laboratory construction, and of apparatus, are points to be aimed at, so that an experiment shall be an exact investigation of an everyday phenomenon carried on with materials ready to hand.

Prof. Miall would apply the principle of experiment and research to education as a whole, and not merely to the scientific part of it, and if the words are understood in a broad sense little can be said against their application to studies of all kinds, for they merely signify trying and finding out. But experiment is usually taken to mean the manipulation of tangible materials arranged to produce some effect or determine its cause. Work of this kind creates and fosters a spirit of inquiry, and it is probably the most suitable means of training the immature mind to weigh evidence and avoid hasty conclusions. But there are other aspects of education, and a complete educational science must take them into consideration. Mr. P. A. Barnett took up this side, urging that abstract studies like literature were as worthy of a high place in the curriculum as the concrete sciences. Prof. H. L. Withers inclined also to this view, and suggested the following as prominent and central topics within the scope of educational science. First, the conditions of health, physical, mental, moral; second, the theory of the curriculum, the order in which subjects should be presented and their natural relation to one another; third, the theory and method, the conditions of proof and of inference, and the conditions in which the attention of young children could be excited and maintained; and, fourth, the theory of conduct, and the conditions under which desirable qualities in human nature were found to flourish and to become permanent for life.

An educational science has not yet been constructed, and differences of opinion exist in all its departments. In mathematics, for instance, no principles as to the subjects and order of study are universally accepted. Prof. Perry's address, which we are fortunate in being able to print in full, is a powerful assault upon the traditional mathematical teaching of our schools. The discussion upon it was one of the best that has ever occurred in the British Association, and its only weakness was on the side of practical schoolmasters, few of whom were present to deal with it from their point of view. Perhaps some mathematical masters will remedy the deficiency by dealing with the address in our correspondence columns. The general opinion of the meeting was that a reform of the teaching of mathematics is needed, and a committee was appointed by the Association to deal with this subject, with Prof. A. R. Forsyth, of Cambridge, as Chairman, and Prof. Perry as Secretary.

Another valuable discussion was on the teaching of botany, Mr. Harold Wager dealing with it as a school subject, and Prof. F. O. Bower in its more advanced aspects. Mr. Wager's paper will appear in the next number of THE SCHOOL WORLD, and we also hope to be able to publish a description of work in botany which has been successfully carried on in a secondary school.

A somewhat feeble discussion occurred on the subject of commercial education, but the opening paper, by Mr. L. L. Price, was a forcible plea on behalf of the claim of economics to a place in the education of the citizen. He pointed out, in the course of his remarks, that some training in logic is beneficial to business men, and an acquaintance with economic argument, as expounded in the theoretical reasonings of the text-books, may impart this training in close connection with the phenomena of business life. From the point of view of commercial education too much time has hitherto been spent on questions of origin—such as the manor—which attract by the opportunity they offer for ingenious hypothesis, but are from their nature difficult to solve, and, by comparison, too little attention has been bestowed on later but less misty periods. But it is impossible to gain a real knowledge of the causes and conditions of the commercial and industrial success of England without a special study of economic history, as general histories have dealt but scantily with economic matters. Lastly, statistics, which has also progressed of late, supplies economics with the means of systematic observation, in default of the more effective mode of experiment open to a physical science like chemistry. An elementary knowledge of statistical technique and methods is a requirement of the times and a special need of commercial education.

On the last day of the Section, the Bishop of Hereford, Dr. Percival, read a most valuable paper upon the influence of universities and examining bodies upon the curricula of secondary schools. A committee has been appointed to report upon this subject, with Prof. Armstrong as Chairman, and Mr. Rouse as Secretary. The following is a scheme of requirements which Dr. Percival suggested should be substituted for the present "Responsions" or "Little-go" examinations of Oxford and Cambridge:—(1) Latin examination to include the translation into English of easy unprepared passages, and also some questions upon a selected period of Roman history and literature; (2) elementary mathematics, more attention to be given to scientific arithmetic and to easy original work in geometry: (3) elements of natural science and

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scientific methods; (4) elementary knowledge of either French or German or Italian; (5) English, the examination to include English composition and questions upon some period of English history and literature; and (6) Greek, the examination to include translation into English of easy unprepared passages, and also some questions on a selected period of Greek history or literature, or, instead of Greek, French or German or some branch of natural science, the standard required in this case to be such as to show that the candidate was fitted to enter upon an honour course of university study. Any student who had passed in three of the six subjects should be allowed to commence his residence in the university on condition that he must pass in the other three before admission to any other examination in the university.

Finally, Mr. H. W. Eve described a scheme of work for boys leaving school at sixteen or seventeen years of age. In devising a curriculum of this kind, he pointed out, it is necessary to guard, on the one hand, against a curriculum too exclusively practical, and on the other hand against the waste of time on a half-finished classical education, generally including no Greek. Too often the result is that time and energy are spent on gaining a very imperfect knowledge of Latin, which might have been more profitably devoted to other subjects. The Latin learnt at school is never kept up; it contributes but little to the formation of intellectual tastes, so necessary as an antidote to trivial and vulgar pursuits. What is really wanted is a secondary education at once practical and liberal, and that in a world much changed within the lifetime of men not yet old. Science must fill an important place in such an education; not only must some familiarity with scientific method be acquired, but also a good deal of that scientific knowledge which is essential for intelligent general reading. Add to the time required for mathematics and science what is needed for English, history, and geography, and two modern languages, and but little time is left for Latin. German, too much neglected in English schools, is essential both on practical and on general grounds, and should take the place of Latin. Nor would there be any appreciable loss in point of discipline and training. Modern languages, though easier than the classical languages, present quite enough difficulties for the average boy, and he has at the end of his course something to show for his efforts. Much depends, however, on effective scholarly teaching and on the selection of reading-books requiring sustained thought.

It will be evident from the foregoing that the new Section of the British Association has fully justified its establishment. It is to be hoped that at the meeting in Belfast next year more practical schoolmasters will be present than were at the recent meeting. So far as we know, the only educational organisation which sent delegates was the Assistant-masters' Association, which was represented by Mr. Rouse, of Rugby, and Mr. Daniell, of the Mercers' School.

SIR JOHN GORST ON EDUCATIONAL PRINCIPLES.[1]

The invitation of the British Association to preside over the Section of Education, established this year for the first time, has been given to me as a representative of that Government Department which controls the larger, but perhaps not the most efficient, part of the education of the United Kingdom. The most suitable subject for my opening address would therefore seem to be the proper function of National Authority, whether central or local, in the education of the people; what is the limit of its obligations; what is the part of education in which it can lead the way; what is the region in which more powerful influences are at work, and in which it must take care not to hinder their operation; and what are the dangers to real education inseparable from a general national system. I shall avoid questions of the division of functions between central and local authorities, beset with so many bitter controversies, which are political rather than educational.

In the first place, so far as the mass of the youth of a country is concerned, the public instructor can only play a secondary part in the most important part of the education of the young—the development of character. The character of a people is by far its most important attribute. It has a great deal more moment in the affairs of the world, and is a much more vital factor in the promotion of national power and influence, and in the spread of empire, than either physical or mental endowments. The character of each generation depends in the main upon the character of the generation which precedes it; of other causes in operation the effect is comparatively small. A generation may be a little better or a little worse than its forefathers, but it cannot materially differ from them. Improvement and degeneracy are alike slow. The chief causes which produce formation of character are met with in the homes of the people. They are of great variety and mostly too subtle to be controlled. Religious belief, ideas, ineradicable often in maturer life, imbibed from the early instruction of parents, the principles of morality current amongst brothers and sisters and playmates, popular superstitions, national and local prejudices, have a far deeper and more permanent effect upon character than the instruction given in schools or colleges. The teacher, it is true, exercises his influence among the rest. Men and women of all sorts, from university professors to village dames, have stamped some part of their own character upon a large proportion of their disciples. But this is a power that must grow feebler as the number of scholars is increased. In the enormous schools and classes in which the public instruction of the greater part of the children of the people is given the influence on character of the individual teacher is reduced to a minimum. The old village dame might teach her half-dozen children to be kind and brave and to speak the truth, even if she failed to teach them to read and write. The headmaster of a school of 2,000, or the teacher of a class of eighty, may be an incomparably better intellectual instructor, but it is impossible for him to exercise much individual influence over the great mass of his scholars.

There are, however, certain children for the formation of whose characters the nation is directly responsible—deserted children, destitute orphans, and children whose parents are criminals or paupers. It is the duty and interest of the nation to provide for the moral education of such children and to supply artificially the influences of individual care and love. The neglect of this obligation is as injurious to the public as to the children. Homes and schools are cheaper than prisons and workhouses. Such a practice as that of permitting dissolute

[1] An address to the Educational Science Section of the British Association for the Advancement of Science, delivered by the Rt. Hon. Sir John Gorst, F.R.S., President of the Section, at Glasgow, on September 12th, 1901.

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pauper parents to remove their children from public control to spend the summer in vice and beggary at races and fairs, to be returned in the autumn, corrupt in body and mind, to spread disease and vice amongst other children of the State, would not be tolerated in a community intelligently alive to its own interest.

A profound, though indirect and untraceable, influence upon the moral education of a people is exercised by all national administration and legislation. Everything which tends to make the existing generation wiser, happier, or better has an indirect influence on the children. Better dwellings, unadulterated food, recreation grounds, temperance, sanitation, will all affect the character of the rising generation. Regulations for public instruction also influence character. A military spirit may be evoked by the kind of physical instruction given. Brutality may be developed by the sort of punishments enjoined or permitted. But all such causes have a comparatively slight effect upon national character, which is in the main the product, for good or evil, of more powerful causes which operate, not in the school, but in the home.

For the physical and mental development of children it is now admitted to be the interest and duty of a nation in its collective capacity to see that proper schools are provided in which a certain minimum of primary instruction should be free and compulsory for all, and, further, secondary instruction should be available for those fitted to profit by it. But there are differences of opinion as to the age at which primary instruction should begin and end; as to the subjects it should embrace; as to the qualifications which should entitle to further secondary instruction; and as to how far this should be free or how far paid for by the scholar or his parents.

The age at which school attendance should begin and end is in most countries determined by economic, rather than educational, considerations. Somebody must take charge of infants in order that mothers may be at leisure to work; the demand for child labour empties schools for older children. In the United Kingdom minding babies of three years old and upwards has become a national function. But the infant "school," as it is called, should be conducted as a nursery, not as a place of learning. The chief employment of the children should be play. No strain should be put on either muscle or brain. They should be treated with patient kindness, not beaten with canes. It is in the school for older children, to which admission should not be until seven years of age, that the work of serious instruction should begin, and that at first for not more than two or three hours a day. There is no worse mistake than to attempt by too early pressure to cure the evil of too early emanicipation from school. Beyond the mechanical accomplishments of reading, writing, and ciphering, essential to any intellectual progress in after life, and dry facts of history and grammar, by which alone they are too often supplemented, it is for the interest of the community that other subjects should be taught. Some effort should be made to develop such faculties of mind and body as are latent in the scholars. The same system is not applicable to all; the school teaching should fit in with the life and surroundings of the child. Variety, not uniformity, should be the rule. Unfortunately the various methods by which children's minds and bodies can be encouraged to grow and expand are still imperfectly understood by many of those who direct or impart public instruction. Examinations are still too often regarded as the best instrument for promoting mental progress; and a large proportion of the children in school, both elementary and secondary, are not really educated at all—they are only prepared for examinations. The delicately expanding intellect is crammed with ill-understood and ill-digested facts, because it is the best way of preparing the scholar to undergo an examination test. Learning to be used for gaining marks is stored in the mind by a mechanical effort of memory, and is forgotten as soon as the Class-list is published. Intellectual faculties of much greater importance than knowledge, however extensive—as useful to the child whose schooling will cease at fourteen as to the child for whom elementary instruction is but the first step in the ladder of learning—are almost wholly neglected.

The power of research—the art of acquiring information for oneself—on which the most advanced science depends, may by a proper system be cultivated in the youngest scholar of the most elementary school. Curiosity and the desire to find out the reason of things is a natural, and to the ignorant an inconvenient, propensity of almost every child; and there lies before the instructor the whole realm of Nature knowledge in which this propensity can be cultivated. If children in village schools spent less of their early youth in learning mechanically to read, write, and cipher, and more in searching hedgerows and ditch-bottoms for flowers, insects, or other natural objects, their intelligence would be developed by active research, and they would better learn to read, write, and cipher in the end. The faculty of finding out things for oneself is one of the most valuable with which a child can be endowed. There is hardly a calling or business in life in which it is not better to know how to search out information than to possess it already stored. Everything, moreover, which is discovered sticks in the memory and becomes a more secure possession for life than facts lazily imbibed from books and lectures. The faculty of turning to practical uses knowledge possessed might be more cultivated in primary schools. It can to a limited extent, but to a limited extent only, be tested by examination. Essays, compositions, problems in mathematics and science, call forth the power of using acquired knowledge. Mere acquisition of knowledge does not necessarily confer the power to make use of it. In actual life a very scanty store of knowledge, coupled with the capacity to apply it adroitly, is of more value than boundless information which the possessor cannot turn to practical use. Some measures should be taken to cultivate taste in primary schools. Children are keen admirers. They can be early taught to look for and appreciate what is beautiful in drawing and painting, in poetry and music, in nature, and in life and character. The effect of such learning on manners has been observed from remote antiquity.

Physical exercises are a proper subject for primary schools, especially in the artificial life led by children in great cities; both those which develop chests and limbs, atrophied by impure air and the want of healthy games, and those which discipline the hand and the eye—the latter to perceive and appreciate more of what is seen, the former to obey more readily and exactly the impulses of the will. Advantage should be taken of the fact that the children come daily under the observation of a quasi-public officer—the school-teacher—to secure them protection, to which they are already entitled by law, against hunger, nakedness, dirt, over-work, and other kinds of cruelty and neglect. Children's ailments and diseases should by periodic inspection be detected; the milder ones, such as sores and chilblains, treated on the spot, the more serious removed to the care of parents or hospitals. Diseases of the eye and all maladies that would impair the capacity of a child to earn its living should in the interest of the community receive prompt attention and the most skilful treatment available. Special schools for children who are crippled, blind, deaf, feeble-minded, or otherwise afflicted, should be provided at the public cost, from motives, not of mere philanthropy, but of enlightened self-interest. So far as they improve the capacity of such children they lighten the burden on the community.

I make no apology for having dwelt thus long upon the necessity of a sound system of primary instruction: that is the only foundation upon which a national system of advanced

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education can be built. Without it our efforts and our money will be thrown away. But while primary instruction should be provided for, and even enforced upon, all, advanced instruction is for the few. It is the interest of the commonwealth at large that every boy and girl showing capacities above the average should be caught and given the best opportunities for developing those capacities. It is not its interest to scatter broadcast a huge system of higher instruction for anyone who chooses to take advantage of it, however unfit to receive it. Such a course is a waste of public resources. The broadcast education is necessarily of an inferior character, as the expenditure which public opinion will at present sanction is only sufficient to provide education of a really high calibre for those whose ultimate attainments will repay the nation for its outlay on their instruction. It is essential that these few should not belong to one class or caste, but should be selected from the mass of the people, and be really the intellectual *élite* of the rising generation. It must, however, be confessed that the arrangements for selecting these choice scholars to whom it is remunerative for the community to give advanced instruction are most imperfect. No "capacity-catching machine" has been invented which does not perform its function most imperfectly: it lets go some it ought to keep, and it keeps some it ought to let go. Competitive examination, besides spoiling more or less the education of all the competitors, fails to pick out those capable of the greatest development. It is the smartest, who are also sometimes the shallowest, who succeed. "Whoever thinks in an examination," an eminent Cambridge tutor used to say, "is lost." Nor is position in class obtained by early progress in learning an infallible guide. The dunce of the school sometimes becomes the profound thinker of later life. Some of the most brilliant geniuses in art and science have only developed in manhood. They would never in their boyhood have gained a county scholarship in a competitive examination.

In primary schools, while minor varieties are admissible, those, for instance, between town and country, the public instruction provided is mainly of one type; but any useful scheme of higher education must embrace a great variety of methods and courses of instruction. There are roughly at the outset two main divisions of higher education—the one directed to the pursuit of knowledge for its own sake, of which the practical result cannot yet be foreseen, whereby the "scholar" and the votary of pure science is evolved; the other directed to the acquisition and application of special knowledge by which the craftsman, the designer, and the teacher are produced. The former of these is called secondary, the latter technical, education. Both have numerous subdivisions which trend in special directions.

The varieties of secondary education in the former of these main divisions would have to be determined generally by considerations of age. There must be different courses of study for those whose education is to terminate at sixteen, at eighteen, and at twenty-two or twenty-three. Within each of these divisions, also, there would be at least two types of instruction, mainly according as the student devoted himself chiefly to literature and language, or to mathematics and science. But a general characteristic of all secondary schools is that their express aim is much more individual than that of the primary school; it is to develop the potential capacity of each individual scholar to the highest point, rather than to give, as does the elementary school, much the same modicum to all. For these reasons it is essential to have small classes, a highly educated staff, and methods of instruction very different from those of the primary school. In the formation of character the old secondary schools of Great Britain have held their own with any in the world. In the rapid development of new secondary schools in our cities it is most desirable that this great tradition of British public-school life should be introduced and maintained. It is not unscientific to conclude that the special gift of colonising and administering dependencies, so characteristic of the people of the United Kingdom, is the result of that system of self-government to which every boy in our higher public schools is early initiated. But while we boast of the excellence of our higher schools on the character-forming side of their work, we must frankly admit that there is room for improvement on their intellectual side. Classics and mathematics have engrossed too large a share of attention: science, as part of a general liberal education, has been but recently admitted, and is still imperfectly estimated. Too little time is devoted to it as a school subject: its investigations and its results are misunderstood and undervalued. Tradition in most schools, nearly always literary, alters slowly, and the revolutionary methods of science find all the prejudices of antiquity arrayed against them. Even in scientific studies, lack of time and the obligation to prepare scholars to pass examinations cause too much attention to be paid to theory, and too little to practice, though it is by the latter that the power of original research and of original application of acquired knowledge is best brought out. The acquisition of modern languages was in bygone generations almost entirely neglected. In many schools the time given to this subject is still inadequate, the method of teaching antiquated, the results unsatisfactory. But the absolute necessity of such knowledge in literature, in science, and in commerce is already producing a most salutary reform.

The variety of types of secondary instruction demanded by the various needs and prospects of scholars requires a corresponding variety in the provision of schools. This cannot be settled by a rule-of-three method, as is done in the case of primary instruction. We cannot say that such and such an area being of such a size and of such a population requires so many secondary schools of such a capacity. Account must be taken in every place of the respective demands for respective types and grades of secondary education; and existing provision must be considered.

It must not, however, be forgotten that a national system of education has its drawbacks as well as its advantages. The most fatal danger is the tendency of public instruction to suppress or absorb all other agencies, however long established, however excellent their work, and to substitute one uniform mechanical system, destructive alike to present life and future progress. In our country, where there are public schools of the highest repute carried on for the most part under ancient endowments, private schools of individuals and associations, and universities entirely independent of the Government, there is reasonable hope that with proper care this peril may be escaped. But its existence should never be forgotten. Universal efficiency in all establishments that profess to educate any section of the people may properly be required; but the variety, the individuality, and the independence of schools of every sort, primary and secondary, higher and lower, should be jealously guarded. Such attributes once lost can never be restored.

There still remains for our consideration the second division of higher education, viz., the applied or technological side. It is in this branch of education that Great Britain is most behind the rest of the world; and the nation in its efforts to make up the lost ground fails to recognise the fact that real technical instruction (of whatever type) cannot possibly be assimilated by a student unless a proper foundation has been laid previously by a thorough grounding of elementary and secondary instruction. Our efforts at reform are abrupt and disconnected. A panic from time to time sets in as to our backwardness in some particular branch of commerce or industry. There is a sudden rush to supply the need. Classes and schools spring up like

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mushrooms, which profess to give instruction in the lacking branch of applied science to scholars who have no elementary knowledge of the particular science, and whose general capacities have never been sufficiently developed. Students are invited to climb the higher rungs of the ladder of learning who have never trod the lower. But science cannot be taught to those who cannot read, nor commerce to those who cannot write. A few elementary lessons in shorthand and book-keeping will not fit the British people to compete with the commercial enterprise of Germany. Such sudden and random attempts to reform our system of technical education are time and money wasted. There are grades and types in technological instruction, and progress can only be slow. It is useless to accept in the higher branches a student who does not come with a solid foundation on which to build. In such institutions as the polytechnics at Zurich and Charlottenburg we find the students exclusively drawn from those who have already completed the highest branches of general education; in this country there is hardly a single institution where this could be said of more than a mere fraction of its students. The middle grades of technological instruction suffer from a similar defect. Boys are entered at technical institutions whose only previous instruction has been at elementary schools and evening classes; whose intellectual faculties have not been developed to the requisite point; and who have to be retaught the elements to fit them for the higher instruction. In fact, there is no scientific conception of what this kind of instruction is to accomplish, and of its proper and necessary basis of general education.

Yet this is just the division of higher education in which public authority finds a field for its operations practically unoccupied. There are no ancient institutions which there is risk of supplanting. The variety of the subject itself is such that there is little danger of sinking into a uniform and mechanical system. What is required is first a scientific, well-thought-out plan, and then its prompt and effective execution. A proper provision of the various grades and types of technological instruction should be organised in every place. The aim of each institution should be clear; and the intellectual equipment essential for admission to each should be laid down and enforced. The principles of true economy, from the national point of view, must not be lost sight of. Provision can only be made (since it must be of the highest type to be of the slightest use) for those really qualified to profit by it to the point of benefiting the community. Evening classes with no standard for admission and no test of efficiency may be valuable from a social point of view as providing innocent occupation and amusement, but they are doing little to raise the technical capacity of the nation. So far from "developing a popular demand for higher instruction" they may be preventing its proper growth by perpetuating the popular misconception of what real technical instruction is, and of the sacrifices we must make if our people are to compete on equal terms with other nations in the commerce of the world. The progress made under such a system would at first be slow; the number of students would be few until improvements in our systems of primary and secondary instruction afforded more abundant material on which to work; but our foundation would be on a rock, and every addition we were able to make would be permanent, and contribute to the final completion of the edifice.

It is the special function of the British Association to inculcate "a scientific view of things" in every department of life. There is nothing in which scientific conception is at the present moment more urgently required than in national education; and there is this peculiar difficulty in the problem, that any attempt to construct a national system inevitably arouses burning controversies, economical, religious, and political. It is only a society like this, with an established philosophical character, that can afford to reduce popular cries about education (which ignore what education really is, and perpetuate the absurdity that it consists in attending classes, passing examinations, and obtaining certificates) to their true proportions. If this Association could succeed in establishing in the minds of the people a scientific conception of a National Education System, such as has already been evolved by most of the nations of Europe, the States of America, and our own Colonies, it would have rendered a service of inestimable value to the British nation.

THE TEACHING OF MATHEMATICS.[1]

By PROFESSOR JOHN PERRY, D.Sc., LL.D., F.R.S.

FOR many years mathematicians have occasionally denounced our methods of teaching mathematics from their own point of view. I might quote Prof. Sylvester, Prof. de Morgan, and many others. Some of my friends who are interested in the education of possible mathematicians, and others like myself who are more interested in the education of the average citizen, feel that we ought not to wait longer in obtaining from such an audience as is here present an authoritative statement on this subject.

I beg to present to you a specimen syllabus which I have recently prepared for training colleges; any syllabus following more orthodox lines may be adopted by any training college, but as a member of a departmental committee which has recently been sitting, I have recommended this one.[2]

It is to be remembered that courses of instruction adopted in training colleges are very likely to be adopted in primary schools, in continuation schools, and in many secondary schools. I have been allowed by the Science and Art Department to introduce this method of mathematical teaching in many evening science-schools and technical colleges. In some technical schools the usual pure mathematics syllabus has already been discarded altogether in favour of the new one. It is obvious, therefore, that what I am doing may have far-reaching consequences, and I beg, gentlemen, that you who represent so well every kind of authority on this subject will give me the benefit of your severest criticism and advice.

This is not to be a mere academic discussion. Anybody who thinks that I am making a mistake, or who sees how my method may be improved and who holds his tongue, is doing a real harm to the country. In a few years this new system will have become to some extent crystallised, and it will not then be so easy as it is now to get changes made in it; it will be a very difficult thing indeed to get it discarded altogether. I have shown that I recognise the greatness of my responsibility, but I hope that you will see that you have a duty to perform.

I have taught mathematics and applied science or engineering to almost every kind of boy or man. I have had my present notions almost as far back as thirty years ago. When I was young I felt diffident; now I have lost most of that feeling, because all my experience has confirmed my opinions and has shown me that many other teachers have the same views as myself.

I am about to say again to you what I said in 1880, in

[1] Address delivered on September 14th, at the opening of a discussion in the Section of Educational Science, at the Glasgow meeting of the British Association. Prof. Perry has given THE SCHOOL WORLD special permission to publish this address in full.

[2] This syllabus will appear in the November number of THE SCHOOL WORLD.

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a paper read before the Society of Arts, and what I have said several times since then. If I could think that you had read the book containing some of my papers, of which I have sent a copy to almost all of you, it would not be necessary for me to say much now.

In presenting the syllabus, I want it to be clearly understood that I recommend this method, not only for classes of engineer apprentices, not only for children in board schools, not only for the average British boy, but for the boys of very acute intellect who form less than one per cent. of the higher-class population, as well as for the few boys—say one in ten millions—who are likely to become great mathematicians.

I have said that it is usefulness which must determine what subjects ought to be taught to children and in what ways, and as I have been blamed for this, I should like to say something about the utility of the study of mathematics.

Although we can understand the old "mark-time" philosophers, who loved to plough the sand for the thousandth time and never reaped any harvest, saying with Seneca, "Invention of useful things is drudgery for the lowest slaves," surely it can only be affectation in a mathematician of the twentieth century to echo, "It is an affront to geometry to say that it led to the principle of the arch," or "the sole function of astronomy is to assist in raising the mind to the contemplation of things which are to be perceived by the pure intellect alone." In truth, the pure mathematician is just like the rest of us. People outside any study are apt to think the student foolish if his results are not useful to outsiders. The student, irritated that an ignorant outsider should apply a stupid standard to his work, is tempted to say that in so far as he is useful to outsiders he is hateful to himself. But this is temporary irritation. The pure mathematician is pleased when his discoveries are of use to the physicist. The physicist is pleased when his discoveries are of use to the engineer. And whether they like it or not, it is true that the engineer does often suggest new departures in physics, and the physicist does often suggest new departures to the pure mathematician.

What an affectation it is for a student to say that his study is *useless!* The pursuit of pure knowledge for its own sake is one of the noblest of occupations. But why? Surely because of its many-sided usefulness, one side being its development of the mental power and soul, and indeed one may say the emotions of the student. And because a worker in some quite different branch of science greatly ignorant of the first branch gets from a discovery in the first branch an idea which helps him in his own work, surely, surely

> Nothing is here for tears, nothing to wail
> Or knock the breast . . . .

Let not, then, the pure mathematician be angry with me if I, an outsider, hold the view that my study is nobler than his. Let him keep to his ideals; but to me the pure mathematician is great because he has helped me so much in what I consider important things. The politician has his ideals, and so has the financier; but to me their value consists in what they have done to help forward what seem to me important things. What we want is a great Toleration Act which will allow us all to pursue our own ideals, taking each from the other what he can in the way of mental help. We do not want to interfere with the students of pure mathematics, men whose peculiar mental processes are suited to these studies, men whose labours cannot be spared from the world's service. We believe that the more they hold themselves in their studies as a race of demigods apart, the better it may be for the world. They are pursuing a branch of science for its own sake and doing it all the better for the belief they hold that pure mathematics ought to be studied with no view to its application. But all the same I hold that the study began because it was useful, it continues because it is useful, and it is valuable to the world because of the usefulness of its results. The pure mathematician must allow me to go on thinking that if his discoveries were not being utilised continually, his study would long ago have degenerated into something like what the Aristotelian dialectic became in the 14th century.

I belong to a great body of men who apply the principles of mathematics in physical science and engineering; I belong to the very much greater body of men who may be called persons of average intelligence. In each of these capacities I need mental training and also mathematical knowledge. The mathematician says that he wants to have nothing to do with us; but it is too late to say this sort of thing. It is he who has fixed how his subject shall be taught to us in schools, and he provides us with teachers of it. We pay these teachers to give us something that will be useful in our education and useful to us in life, useful to us in understanding our position in the universe. Surely we have a right to ask the mathematicians to look at this matter from our point of view, and to ask if it is not possible to help us without hurting themselves and their study. Without the help of the mathematicians I feel that it is almost impossible to get the teachers of mathematics to give us instruction of a useful kind.

I have hurriedly put together what strike me as obvious forms of usefulness in the study of mathematics.

(1) In producing the higher emotions and giving mental pleasure. Hitherto neglected in teaching almost all boys.

(*a*) In brain development (*b*) in mere mathematical study.

(2) In the aid given by mathematical weapons in the study of physical science. Hitherto neglected in teaching almost all boys.

(3) In passing examinations. The only form that has not been neglected. The only form really recognised by teachers.

(4) In giving men mental tools as easy to use as their legs or arms; enabling them to go on with their education (development of their souls and brains) throughout their lives, utilising for this purpose all their experience. This is exactly analogous with the power to educate oneself through the fondness for reading.

(5) Perhaps included in (4); in teaching a man the importance of thinking things out for himself and so delivering him from the present dreadful yoke of authority, and convincing him that, whether he obeys or commands others, he is one of the highest of beings. This is usually left to other than mathematical studies.

(6) In making men in any profession of applied science feel that they know the principles on which it is founded and according to which it is being developed.

(7) In giving to acute philosophical minds a logical counsel of perfection altogether charming and satisfying, and so preventing their attempting to develop any philosophical subject from the purely abstract point of view, because the absurdity of such an attempt has become obvious.

I believe that all these functions would be performed well under the new system which is suggested. At present, with the exception of (3), which is not particularly nice, in the performance of these functions mathematics affects less than one per cent. of the boys who are supposed to study it. I am aware that it is the taunt of some mathematical teachers that they are the caretakers of a useless and worshipful holy of holies, but I would have them consider if they have ever themselves been anywhere but in the outer courts of the temple where the shrines are tawdry and the traffic in sacrificial animals is nauseous. With the great leaders of mathematical thought here present I thought I could have no quarrel. I hope that they will agree with me when they understand my scheme. I know personally

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that I have the sympathy of many of them, and that they will forgive what might seem to some people my impudence in speaking about mathematics before them. The very severe remarks of the President of Section A have been reported at full length in the newspapers. I am sorry to think that I have had so little success in explaining my proposed reform. I am inclined to think that, when I have explained it, he will really approve of what he seems now to condemn. He used a very happy illustration of the delights of the specialist in pure mathematics—that waterfall in Labrador, finer than Niagara, which had only been seen by nine white men; and I thought there was more than a little selfishness in his taking that view of matters. Using the illustration in explaining my reform, may I say that by building a railway in Labrador, by making bridges and paths, and hanging wire ropes, and cutting steps, I hope to throw that beautiful scene of which he spoke open to the gaze of many thousands of people. Surely he will see that it was not created for the enjoyment of nine men, however white. And I am afraid, very much afraid, that in spite of him engineers will proceed to utilise the power of that waterfall.

Fifty years ago it was thought right to teach physics and chemistry to all men in the same way; as if all men were to be physicists or chemists. The great growth of these subjects made a change necessary, and the newness of the studies made a change possible. For the same reasons I would teach mathematics, at all events advanced mathematics, in quite different ways to different students. In any case, I feel sure that our system of teaching boys elementary mathematics as if they were all going to be pure mathematicians must be altered. Perhaps the mathematicians will forgive my impertinence in saying that even for the boy who is likely to become a great mathematician I advocate improved methods of teaching: I say that the old Alexandrian method is bad. It is immensely important that if any one method of elementary teaching be generally adopted it shall not be hurtful to the one boy in a thousand who is fond of abstract reasoning, but it is just as important that the average boy shall not be hurt. In the heroic times every traveller was asked an enigma; if he did not answer he was killed with torments; if he answered, he was delared a demigod and given to rule over nations. In those times it was thought good to sacrifice myriads of people for the purpose of finding the one demigod.

So now we teach all boys what is called mathematical philosophy, that we may catch in our net the one demigod, the one pure mathematician, and we do our best to ruin all the others. It is nature's way with fishes; 10,000 herrings spawned for one survivor; 10,000 salmon eggs for one marketable fish; 10,000 Toms, Dicks and Harrys mentally destroyed for the sake of producing one man fit to be a mathematical master of a second-rate public school; 10 million destroyed for the sake of producing one great mathematician.

But I would like to point out that ours is an altogether foolish way of producing the mathematical master also. To the age of 24 one may say that the very brightest mathematical minds of the world are being trained on problems about which there is nothing new, in the study of which there is absolutely no chance of a new discovery. The apparatus of this gymnasium of ours differs very little now from what it was thirty or fifty or eighty years ago. One cannot help referring to the similar state of things in regard to the scholastic philosophy. Roscelin, Anselm, Abelard, Peter Lombard, Albertus Magnus, Thomas Aquinas, Duns Scotus, Ockham, were the mental giants of their own time; they were men of the most acute and profound understanding. And the pupils of all their followers traversed the Aristotelian ground in exactly the same way, one generation after another. No advance made by a master was utilised in teaching his pupil. John of Salisbury observed of the Paris dialecticians of his own time that after several years' absence he found them not a step advanced and still employed in urging and parrying the same arguments. Bring up students to the age of 24 in such a system, and how few of them will show that they can get out of it ever after. Let a young mathematician know that all his difficulties were solved long ago; that almost no old mathematical man he meets ever makes a new discovery, nor wants to make one, and you give him the mental attitude of the Schoolmen.

Consider the really clever mathematical men whose academic education is completed in any particular year. Shall we say that one of them becomes a mathematician? that is, a man who extends the boundary of mathematical knowledge. And what of the others, of those whose education has ceased? I think you must admit that if they do not utilise their mathematical knowledge in the study of physical science, their mathematical horizon gets smaller and smaller. From the mathematical point of view they become vegetables. They are not even like the Greek scholars of Constantinople during the dry-rot 1,000 years period, when the world was handed over to the scholastic devil for 1,000 years. The students in Constantinople really read and copied manuscripts and took an interest in learning, but the ordinary mathematical man, as he vegetates, seems to take no interest in mathematics, and never opens a mathematical book except to keep him right when he is drilling the young recruit. Observe that I say nothing about him as a citizen, as an authority on the training of the mind, as a centre of intellectual light for the people among whom he dwells; I speak of him as a mathematician merely.

Now in my experience there is hardly any man who may not become a discoverer, an advancer of knowledge, and the earlier the age at which you give him chances of exercising his individuality the better. Put him in command of all existing knowledge as quickly as possible, and while doing it let him know that he also has the marshal's *baton* in his knapsack. Let him know that he is expected to be making discoveries all the time; not merely that the best established law is not complete, but that in the very simplest things it is not so much what he is told by a teacher, but what he discovers for himself, that is of real value to him, that becomes permanently part of his mental machinery. Educate through the experience already possessed by a boy; look at things from his point of view, that is, lead him to educate himself. I feel that throughout one's whole mathematical course it is important to teach a student through his own experiments, through concrete examples worked out by him. Even good mathematical teachers hate to see their students "wasting time," as they call it, in actually plotting lines of force or stream lines after the algebraic academic answer has been arrived at. They would probably call it waste of time to cauk the joints of plates in a ship. Without this kind of illustration I feel sure that the whole study is useless except for one man in a thousand. I am here speaking of advanced work. But even in elementary work a student ought to be induced to apply his mathematics to problems in his own experience.

When I was an apprentice I knew some trigonometry, much more algebra, and I was an adept in geometry. I wanted to know engineering theory, and the only two books available contained unknown mathematical symbols. Other boys might sigh for other luxuries, but to me the one thing wanting was a knowledge of

$$\frac{dy}{dx} \quad \text{and} \quad \int$$

Looking back, I seem to have panted for a knowledge of the use of these symbols for years. There was nobody to give me advice; I knew many clever engineers, but they could not help

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me. At length I had an opportunity of getting this knowledge. Now I was as well prepared as my fellow students, and yet somehow I lagged behind in exercise work. They dashed easily through 20 examples at the end of a chapter; to me every example was a labour, an interesting labour; but truly a difficult job. And all through that college session I was filled with a sense of my stupidity; satisfied with my progress in itself, but utterly dissatisfied when I compared myself with the others.

Now I know wherein the difference consisted. I was really using the idea of the calculus in all sorts of problems outside the academic ones; making them part of my mental machinery. They had the knack (their previous training had all been in the direction of giving them this knack) of rapidly picking up just such instruction as enabled them to do the examples, and for them there was nothing else.

If I had time I could illustrate my meaning in many ways. From my observation of men and boys I am inclined to think that my way of taking up a study is the common way, the natural way, and that the schoolmasters destroy it and replace it by something that conduces to mere learning.

In this connection it is worth remarking that if a student has been learning and not discovering, when at length as a man he is so exceptional as not to have become *stale* and he does make a discovery, he thinks too much of this child of his old age; he squabbles in the most vulgar manner for priority of discovery. If he had been discovering things all his life he would let anybody claim priority who cared to do so. The fame of having made a discovery would be no great reward for a man from whom an inward glow of pioneering satisfaction has never been absent since he began his studies.

I do not care here to dwell on the fact that, if a student has been increasing his learning all his life, he will make too much of the importance of mere learning.

The unpractical character of mathematical teaching causes mathematical men to leave common sense out of all teaching. Good illustrations of this come from Germany, France, and Switzerland. An engineer needs a knowledge of graphical statics. A good practical course of a few weeks will give him such a thorough grasp of the general principle as will enable him—depending on his own common sense—to do almost anything. It is quite usual in some polytechnics to give an elaborate course of many months, sometimes of a year; every problem ever worked by anybody must be done by every student. Every solution of nearly every problem has got tacked on to it the name of the professor who did it. It is the same with descriptive geometry and other branches of graphical mathematics. The average student properly taught during a few weeks is really a master of each of these subjects, whereas the student who has had an elaborate course retains no initiative and can attack no new problem. If time allowed I could state some amusing illustrations of this.

It is this want of common sense which makes the usual school and polytechnic and university courses in applied science so elaborate. I have here an advertisement, covering the last large page of a daily paper, of all the courses in a certain foreign polytechnic. To prepare to enter, I may say that a boy must work very hard indeed till he is nineteen years of age. It is not at all unusual to find that at eighteen a boy has to stop working for a year because his health has broken down. I know that it is usual to find these boys ignorant of anything even slightly outside their school course.

A spiritless boy of 19, with rounded shoulders, tells you that he has done much science, and *all* algebra, and *all* trigonometry, and you feel proud that English boys stolidly refuse, in spite of all punishment, in spite of being called dunces, to become such products of academic machinery.

This polytechnic syllabus is well worth study. It begins with the stupefied boy of 19, and it gives him four years of pure and applied mathematics of all kinds, and after a practical course he is a finished civil, or mechanical, or electrical, or some other kind of engineer or architect.

Now I am an advocate of technical education as it is given in a few places in England, and as I hope that it will be given in many places when boys come to be properly prepared from school; but I solemnly affirm that an English boy with the usual ignorance of mathematics and physical science when leaving school, pitchforked into a workshop where nobody thinks it his duty to give him instruction; ignorant of theory all his life, getting no scientific education whatsoever, cannot be a much worse engineer than the product of such a polytechnic as this.[1] Can these students ever get back their birthright that they have fooled away? Workshop experience, contact with workmen and nature, must give them some common sense, but it is difficult to see how they can ever get to think for themselves, to act without explicit orders. Can they ever invent? Can they ever become free men? I have seen them trying to become men by sedulously neglecting, forgetting and contemning all the learning of their polytechnic.

On a very much smaller scale one may see the same thing in English Naval, and Artillery, and Royal Engineer officers. Every one of them will tell you that in general intelligence he must have greatly benefited by his mathematical training, although he may be unable to do any mathematical work, having forgotten everything that he ever learnt. He has the sort of respect for science that a famous ruffian of Charles's time had for religion, who stated that he always saluted a church by uncovering his head to it.

All advocates of orthodox methods (keeping the examination form in the background) seem willing to sacrifice every form of usefulness of mathematics to one form, the emotional or soul-preserving mind-training inherent in a perfect logical system; a huge complex deduced logically from simple fundamental truths. It would take me too long if I were to dilate upon the fact that it is time to cease talking of certain things as being fundamental truths, and that all logical deductions from them must be correct. Unless I gave my reasons at considerable length, I might earn a character for flippancy, for sneering at one of the most wonderful and soundest structures built up by human beings out of mental chaos. But I have the right to exclaim against a worship of the structure which prevents its being preserved, enlarged, embellished and made use of.

As soon as we give up the idea of absolute correctness we see that a perfectly new departure may be made in the study of mathematics. The ancients devoted a lifetime to the study of arithmetic; it required days to extract a square root or to multiply two numbers together. Is there any great harm in skipping all that, in letting a schoolboy learn multiplication sums, and in starting his more abstract reasoning at a more advanced point? Where would be the harm in letting a boy

[1] I have taught and examined every kind of boy and man; I have worked with men in the shops as one of themselves; I have been a manager of works and an employer of labour; I have had long experience of the ways of all kinds of manufacturers and engineers. In spite of enormous loss continually going on through the ignorance of English-speaking engineers (I know of most dreadful examples), the great majority of English-speaking employers of engineers believe the unscientific English engineer to be preferable to the finished polytechnic engineer. As an employer I myself used to feel very undecided. Now if there is even an approach to equality of value, see what a serious reproach there is upon the new system. Imagine polytechnic authority insisting on the learning of every detail of an elaborate life-course of study when not the smallest part of it is known to English engineers of practically the same actual value. I know by actual trial that with a quarter of the German fag we can give to the average young Englishman such a knowledge of scientific principles that they become part of his mental machinery, and he can no more forget them, or how to apply them, than he can forget how to read or write. Surely I may be forgiven if I urge strongly the enormous importance of the reform which I advocate.

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assume the truth of many propositions of the first four books of Euclid, letting him accept their truth partly by faith, partly by trial? Giving him the whole fifth book of Euclid by simple algebra. Letting him assume the sixth book to be axiomatic. Letting him, in fact, begin his severer studies where he is now in the habit of leaving off. We do much less orthodox things. Every here and there in one's mathematical studies one makes exceedingly large assumptions because the methodical study would be ridiculous even in the eyes of the most pedantic of teachers. I can imagine a whole year devoted to the philosophical study of many things that a student now takes in his stride without trouble. The present method of training the mind of a mathematical teacher causes it to strain at gnats and to swallow camels. Such gnats are most of the propositions of the sixth book of Euclid; propositions generally about incommensurables; the use of arithmetic in geometry; the parallelograms of forces, &c.; decimals. The camels I do not care to mention, because I am in favour of their being swallowed, and indeed I should like to see them greatly increased in number; they exist in the simplest arithmetic, and geometry, and algebra. Why not put aside ever so much more so as to let a young boy get quickly to the solution of partial differential equations and other useful parts of mathematics that only a few men now ever reach? I have no right to dictate in these matters to the pure mathematicians. They may see more clearly than I do the necessity for a great mathematician going through the whole grind in the orthodox way; but if so, I hardly see their position in regard to arithmetic and other things in the study of which they do allow skipping. I should have thought that the advantage of knowing how to use spherical harmonics or Bessel functions at the age of 17, so as to be able to start in mathematics at Cambridge just about the place where some of the best mathematical men now end their studies for ever, of starting at this high level with youthful enthusiasm, and individuality and inventiveness, would more than compensate for the evils of skipping. I might have put all this in the following briefer form.

Great fields of thought are now open which were unknown to the Alexandrian philosophers. If we begin our study as the Alexandrian philosophers did, with their simplest ideas in arithmetic and geometry, we shall get stale before we know much more than they did. If we begin assuming more complex things to be true (although I do not like to assume that in truth any idea is more complex than another), as we have done in arithmetic, as we ought to do in other parts of mathematics, without becoming stale we may know of all the modern discoveries. We shall thus get the same intellectual training with more knowledge.

I have been speaking of the training of the mathematician, and I may be wrong; but, as to the educational training of the man who is to use his mathematics in the study of pure and applied physical science, I have no doubt whatever of the importance of skipping greatly in all early mathematical work.

In these days all men ought to study Natural Science. Such study is practically impossible without a knowledge of higher mathematical methods than that of the mere housekeeper. It must be more than what is called "knowledge"; it must be mental dexterity, and it must be kept in constant practice if it is not to become rusty, and if men are to remain unafraid of mathematics. As examples of methods necessary even in the most elementary study of nature I may mention:—the use of logarithms in computation; knowledge of and power to manipulate algebraic formulæ; the use of squared paper; the methods of the calculus. Dexterity in all these is easily learnt by all young boys. In such practice their brain power develops quite rapidly, and they learn with pleasure. I feel sure that such dexterity cannot hinder, and can only further the mathematical study of the exceptionally clever student.

For an advanced study of natural phenomena we need the results of the best study of the greatest mathematicians[1]. To me, mathematics is a powerful weapon with which to unlock the mysteries of Nature. If a man knows how to use the weapon, that is enough. Let him leave to others, the men who delight in that, the forging of the weapon, the complete study of it. If I can use the weapon, let my study be of another kind—I think, perhaps, of a higher kind—to study the secrets which even an unskilful use of the weapon will reveal to me. Fain would I know more about how the weapon was made and how to forge it for myself; but if I have no delight or skill in making weapons, and if I have enormous delight in using them, then will I use them if I can, and practise using them till I become skilful, for I know that the weapon-maker is not likely to be skilful in its use.

I have the belief that the study of physical science, and therefore the study of mathematics, by everybody, however poor or however rich, is of the utmost importance to our country, not merely for the knowledge it gives, but for producing the scientific habit of thought, giving to every unit of the population a power to think for itself, and so producing the greatest happiness and giving the greatest strength of all kinds to the nation.

I think that men who teach demonstrative geometry and orthodox mathematics generally are not only destroying what power to think already exists, but are producing a dislike, a hatred for all kinds of computation, and therefore for all scientific study of nature, and are doing incalculable harm.

What I say is especially important for the great and increasing

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[1] I believe that the useful methods of mathematics are easily to be learnt by quite young persons, just as languages are easily learnt in youth. What a wondrous philosophy and history underlie the use of almost every word in every language—yet a child learns to use the word unconsciously. No doubt when such a word was first invented it was studied over and lectured upon, just as one might lecture now upon the idea of a rate, or the use of Cartesian co-ordinates, and we may depend upon it that children of the future will use the idea of the calculus, and use squared paper as readily as they now cypher. As I said at the Society of Arts, in 1880:—"When Egyptian and Chaldean philosophers spent years in difficult calculations, which would now be thought easy by young children, doubtless they had the same notions of the depth of their knowledge that Sir Wm. Thomson might now have of his. How is it, then, that Thomson has gained his immense knowledge in the time taken by a Chaldean philosopher to acquire a simple knowledge of arithmetic? The reason is plain. Thomson, when a child, was taught in a few years more than all that was known three thousand years ago of the properties of numbers. When it is found essential to a boy's future that machinery should be given to his brain, it is given to him; he is taught to use it, and his bright memory makes the use of it a second nature to him; but it is not till after-life that he makes a close investigation of what there actually is in his brain which has enabled him to do so much. It is taken in because a child has much faith. In after years he will accept nothing without careful consideration. The machinery given to the brains of children is getting more and more complicated as time goes on; but there is really no reason why it should not be taken in as early, and used as readily, as were the axioms of childish education in ancient Chaldea. A watch is a complicated piece of mechanism, which it has taken the thought of all the ages to elaborate, but the smallest boy can make it useful to himself. In a recent number of *Macmillan's Magazine* there is a paper by the late Professor Clifford, on 'Boundaries.' It directs attention to some of the simplest mathematical ideas. I felt, when reading it, that nobody could take a greater interest in it than a mathematician who had long used those ideas. The notion of a boundary had long been simple to him, and useful, like his watch to a boy; but one day he looks into its mechanism, and without it becoming less useful, he finds that it opens up for him a world of thought." It is interesting to notice from this old paper of 1880 how clearly we saw, even then, the necessity for the reform that I now advocate; I venture to give one more quotation:—"In pointing out that, as time goes on, we must begin from more and more comprehensive data—in fact, that pupils must commence their studies farther and farther from the real beginning of the subject—I point to a fact of which every teacher of physics gets good evidence, even in the history of twenty years. Teachers of mathematics have not this evidence; but the teaching of natural science is obeying natural laws as yet, not being fettered by crystallised rules and vested interests. Instead of teaching pupils . . . and giving them lectures on virtual velocities, and the like, as was common ten years ago, we begin with a great generalisation, the law of conservation of energy. And yet, after this generalisation was known to men of science, how long it was before teachers ventured to prune away excrescences from the text-books; how long it was before they ventured to say, 'It is not necessary to teach as we ourselves were taught; we can do better; we can give in a few words, and illustrate by a few experiments, a general law which it required years for us to understand.'"

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number of men whose occupations are with applied science. I am particularly interested in engineering, and have a particular knowledge of the wants of engineers. It must be remembered that the engineer is becoming a very important person. What is going to affect the rule of nations over one another more and more is that for which Napoleon gibed at us —manufacture, the development of all natural resources which help in manufacture, and the distribution of things manufactured. To perform this well requires character and power to think in everyone who has to do with it, whether managers or foremen or workmen. It is becoming more and more evident that the engineer requires a scientific technical training, and we are face to face with the ghastly fact that our engineers young and old are unfitted by this school education to undergo this necessary training. Furthermore, although he feels his needs, bitterly, deeply, he scorns the idea that mathematics will help him in any way, for he has already done at school what was called mathematics. Such mathematics as he was taught is indeed a very useless thing to him. He wants to be able to use such very simple mental tools as the ideas of the calculus; he needs them in one way or another in every kind of engineering; he needs to be so familiar with them that he can use them in every kind of new problem that comes before him. There is no part of engineering of which the theory does not need the use of these simple tools. And we tell him that he cannot learn to use these tools until he has worked for many years on the studies of the Alexandrian philosophers and their followers. What I know for certain is that the average man cannot learn the use of these tools except when young. We have some excellent technical colleges at our universities and elsewhere, but the students who enter them are prepared to enter only the older kind of technical college which prepared clergymen and literary men and lawyers and legislators for their professions; they are in no way prepared to enter science colleges. And so, many of these science colleges are merely marking time or doing what is much worse, giving to their students an education in mere formulæ which they do not really understand, the power to think being utterly lost, so that the students of these colleges become the laughing-stock of the average engineer.

It is curious how early mathematical training, by inducing a belief in what looks like mathematical reasoning, prevents men from testing the value of the engineering "laws" that they read or listen to. Rules that are approximately true in only certain cases are supposed to be absolutely true in all cases. In some of our colleges the engineering professor begins by trying to undo the evils of early mathematical training, cultivating the common sense of his pupils, letting them see the real value of mathematics, and in such colleges very good work is being done. I may say, however, that it is really too late in the life of the average boy to begin such training after he enters college.

One sometimes finds a good mathematician taking to engineering problems. But he is usually "stale" and unwilling to go so thoroughly into these practical matters, and what he publishes is particularly harmful because it has such an honest appearance. When we do get, once in thirty years, a fairly good mathematician who has common-sense notions about the things that engineers deal with, or a fairly good engineer who has a common-sense command of mathematics, we have men who receive the greatest admiration from the engineering profession, and yet it seems to me that quite half of all the students leaving our technical colleges ought to be able to exercise these combined powers of mathematics were they sensibly taught in school and college.

Perhaps the worst fault of our teaching is that the pupil is taught as if he were going to be a teacher himself. A man who teaches a subject is kept constantly in mind of a hundred rules. A man who does not teach but who is able to utilise his knowledge remembers only a very few rules—he knows these so well by constant use of them that he can apply them to every possible case that arises.

Take pure or applied mathematics, for example. In any ordinary treatise at the end of every chapter there are, say, twenty examples, all to be done by the labour-saving rule or rules taught in the chapter. But a man who is not a teacher can do every kind of problem—possibly in a clumsy way, but he can do it—by the use of perhaps one or two general principles which he never forgets. The average man not having to teach who has gone through treatises and passed examinations forgets these hundreds of rules; he remembers his hard study, gets disheartened at the idea of re-studying what he has forgotten, and indeed gets to loathe the idea of it. He was not taught to look at things from a really practical common-sense point of view; to practise the use of one general principle in all sorts of quite different-looking problems. I repeat—the average young engineer may be made to possess a power of using the methods of mathematics which will be as easy to him as reading or writing or using any hand tool, a power which never grows rusty because he exercises it every day of his life. His present intense hatred of mathematics and all theory of engineering requiring a knowledge of mathematics is very dreadful and is leading towards disaster. It seems greatest in men who have been to good schools; it is noticeable in many men who have attended science classes in colleges; it is very noticeable in electrical engineers whose whole profession is based on mathematical computation. Engineers some of whom are Fellows of the Royal Society are quite outspoken in their condemnation of all theory, all computation more complex than that of the housekeeper, and they themselves are unable to distinguish between work and rate of doing work; between coulombs and ampères. I do not now speak merely of the older men.

For the boy of brilliant intellect, of whose education mathematics forms a small part, to whom Euclidian reasoning is a logical counsel of perfection, even the shortest study of it is altogether good. For such intellectual training as he requires I feel sure that my improved method of study would be ever so much better. I admit, however, that this sort of boy gets no great harm under the present system. It is the average boy who is stupified in being forced to study things that have no meaning to him whatsoever. And even the fairly clever mathematical man who becomes a teacher in other subjects is led by his mathematical study to be much too apt in teaching anything to begin with the abstract philosophy of the new study. In beginning to teach a boy to play whist, or to swim, or to write, or to count, or to play billiards, he would philosophise so much and introduce difficulties so unnecessarily that the boy would find it practically impossible ever to learn. He never gets to know that the proper method of teaching any subject is through some kind of experimental work. He is the sort of man who makes children begin to learn a foreign language by its grammar.

I find that a quite common way of beginning the subject of practical geometry is to give lectures on the philosophy of representing a distance *to scale*. That the distance of three feet may be represented to scale by a distance of one inch really needs no philosophic introduction. I find that no boy meets with any difficulty in comprehending what one means by the scale of a map or any drawing; but it is easy to create in him much mental confusion if we proceed to point out what difficulties he ought to experience. And if the philosophy of such a simple scale as this is difficult, think what it must be when one represents on squared paper a quantity such as "the price of silk per pound," or "the height of the barometer in inches,"

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by a distance of one inch. Think of how one could reduce not only the minds of all our students, but the mind of one's self, to imbecility by philosophising on this subject. I find that if you tell a boy to represent any quantity whatsoever to scale, showing him in ten seconds what you mean, he does it, he understands you, and it is only as a much older man that he begins to see how occult he ought to have found the subject.

Like almost every subject of human interest, this one is just as easy or as difficult as we choose to make it. A lifetime may be spent by a philosopher in discussing the truth of the simplest axiom. The simplest facts as to our existence may fill us with such wonder that our minds will remain overwhelmed with wonder all the time. A Scottish ploughman makes a working religion out of a system which appals a mental philosopher. Some young boys of ten years of age study the methods of the differential calculus; other much cleverer boys working at mathematics to the age of 19 have a difficulty in comprehending the fundamental ideas of the calculus. I wasted much precious time of my life on the subject of the fifth book of Euclid, and most people approach the sixth book through years of worry over the earlier geometry, but indeed almost all the propositions of the sixth book may be taken as axiomatic. I know men who seem as if they wanted to revert to the Greek method of dealing with arithmetic. I know teachers who complicate practical geometry work by extracting square roots and performing other simple arithmetical operations, and set such problems in examination papers as: Find

$$2\sqrt{3} + \sqrt{2}$$

They might be forgiven if they did not happen to be utterly wrong from the philosophic point of view which they fancy they occupy.

In most of what I have said I have been considering those boys who take readily to abstract reasoning. I wish to refer more particularly now to the average boy, who represents 99 per cent. of all boys, the boys who dislike abstract reasoning.

If a method of study is disliked by a pupil, a certain kind of knowledge may be given and the power to pass examinations; in this aspect there may be an advantage to the pupil; but there is no training of the mind except in the direction of dulness and stupidity.

A healthy English boy by resorting to excessive athletics and by sheer obstinacy resists the evil, and even when everybody has called him stupid so often that he is quite convinced of his own stupidity, it has no great effect on his conduct. And all the time his teacher, who when young took quite kindly to abstract reasoning, cannot see that the average boy has quite a different way from his own of looking at things, and is really not at all stupid. He is sharp enough outside the mathematical class room, he shows no stupidity afterwards in business, as a legislator, as an engineer.

In the whole history of the world there was never a race with less liking for abstract reasoning than the Anglo Saxon. Every other race has perfected abstract schemes of government. No other race has such an illogical law as our Toleration Act; and yet what a good law it is. Common sense and compromise are believed in, logical deductions from philosophical principles are looked upon with suspicion not only by legislators, but by all our professional men.

When English visitors like Colet were privileged to meet Lorenzo and his friends in the Rucellai gardens, they also enthused over fresh finds of Greek manuscripts and over the philosophy of Plato, but it was then remarked that what they really brought back to England was just such knowledge as could be made of practical use. Always England has been less abstract than other countries. She has possessed mental philosophers, but the average Englishman tries to make use of his knowledge.

In this connection it is interesting to note that the complacent admiration of English engineers for the absence of mathematical theory from their profession is somewhat like that of English lawyers for the absence of all logic and philosophical principles from their technical and subtle system. Scientific men and psychologists hate to look into what they call our disgraceful engineering manuals and digests of the law. If English engineers had the same power over their trade as the lawyers have over theirs, no mathematics or physical science would ever be necessary for them.

No words of any English play are ever so enthusiastically applauded as Sir Peter Teazle's "Damn your principles, sir." No words have such an instantaneous effect in bringing the sympathy of an audience as "I am a practical man, gentlemen." If, then, our Tom Browns and Tom Tullivers really represent 99 per cent. of Anglo-Saxon boys, is it not a pity that educational systems should refuse to recognise the fact?

I should like to put my views as to the two kinds of English boy in the following two parallel statements:—

The average English boy takes unkindly to abstract reasoning, and if compelled to such study when unwilling is hurt mentally for life; loses his self-respect first, then his respect for all philosophy; gets to hate mathematics.	Even for exceptional young boys demonstrative geometry is bad educationally because they reason about geometrical magnitudes before they know what these magnitudes really are; they apply the same reasoning to more complex ideas of which they have the same ignorance; they become vain of their specious knowledge; they get to hate all applications of mathematics.

Philosophy was never intended as a study for children, and even exceptional children do not really learn the Alexandrian philosophy; they only get expert in solving puzzles. It needs age and also a knowledge from experience of the ideas to which the philosophy is applied.

Whether or not all men ought to attempt philosophical studies is a question I need not answer. The old Greek answer is that only a very few are capable. But I do say that, both for those who are dull and for those who are quick, it is important not to begin such study too soon.

It is not in my present brief to say whether the boy who takes kindly to abstract reasoning is really the mental superior of other boys. We are all agreed, I suppose, that if such a boy has also other mental qualities he may be intellectually great. It is, however, well to remember that the easier understanding of say Euclid I. 4 or 5 may imply not greater, but really less mental power, and that the early and seemingly simple proofs in Euclid are really difficult of comprehension to a mind of great natural power. A boy with good reasoning powers suspects a trick, thinks there must be some hidden meaning which he fails to grasp, and it may be that he could deal much more easily with much more involved reasoning than that of the early propositions of Euclid.

When I am told that mathematics can only be learnt through a lifetime, and must remain unknown to the average boy to whom it might be useful, I think of the time when men were able to do all their daily work without reading, writing, or

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cyphering; these were then the learned studies of lifetimes. But as soon as these were needed in people's daily work they were taught quite readily to children without unnecessary philosophy. And now, a child learns to compute long before it philosophises on number. Even Max Müller learned to speak and write long before he was taught grammar or philosophised on philology. M. Jourdain pronounced French very well before he was taught anything of the science of language. Even a poor training-college pupil has done some thinking for herself, and has had emotions, before she is compelled to begin courses on (save the mark) psychology and ethics.

Higher mathematics has got to be a very useful thing; what I argue is that, as in the case of all other generally useful things, the complete study of its philosophy in the orthodox manner is not a necessary part of a school or college curriculum.

My engineering friends think that I have an exaggerated notion of the importance to all men of possessing a love for mathematics. But they have not had my experience; they have not seen, as I have seen, that this affection can be produced in the average boy if he can be subjected to a delightful training when quite young; they have not seen its usefulness all through a man's life as I have seen it. I know of only one other thing that seems to be of equal importance in a man's education all through his life, and this is that he shall have got fond of reading all manner of books when quite young. Take almost any child who hates books, place it in a household where everybody is fond of reading, and it also gets fond of reading in a very short time.

Let me know that a boy possesses these two kinds of affection at the age of ten, and I know that, later, he will possess two great powers; that of being able to use mathematics and that of being able to use books. I have no time to describe what I mean by these two powers; I mean much more than might appear to a man who may have received only the orthodox scientific and literary training.

Such a boy's education will be a constant delight to his teachers if they will only refrain from prosing and the setting of tasks; if they merely make timely suggestions and answer his questions, and leave him to find out things for himself.

Gentlemen, I think the present method of so-called education all over the world to be utterly unscientific. I dare not venture to express my feelings as to the effect which might be produced on the whole world by a reform in the teaching of mathematics, because I wish to appear to you a non-visionary, practical person who needs your votes. There can be no harm in saying that, as there is no real study of natural science which is not quantitative, it must be through mathematics. A man in the twentieth century, whose eyes are not educated through the principles of natural science, can take no proper lessons from history or literature. His imagination is dwarfed. He is a bad citizen because he is at the mercy of quacks of all kinds. I maintain that the safety of a country is founded on the good education, the complete mental and physical development not merely of a few but of all its inhabitants.

I can imagine a real education going on from childhood to old age. I can imagine citizens worthy of further developing and utilising the wondrous scientific discoveries of the world, of utilising the results of the labours of historians and philosophers; citizens enjoying poetry and all kinds of literature. Without the individuality of thought and inventiveness produced by true education in all people, one or two great races of the world may become more powerful than the Assyrians, or Persians, or Greeks, or Romans; but, as in those older races, each citizen will become a manufactured unidead article, the creature of a system which must fall to pieces some time; and when this takes place the ruin will be so terrible, and chaos will last so long, that our own past dark ages will seem to be insignificant in comparison.

ITEMS OF INTEREST.

GENERAL.

It was a happy coincidence that the new Principal of the University of London should be the President of the British Association at the meeting when the Section of Educational Science was inaugurated. The fact suggests to us the hope that the University and the Association will work together in the cause of rational and progressive education. Professor A. W. Rücker is fifty-three years of age, and a man of wide culture and sympathies. He began his education at Clapham Grammar School, whence he proceeded to Brasenose College, Oxford, where he gained high honours in mathematics and natural science, and was a Fellow of the College from 1871 to 1876. In 1874 Professor Rücker became Professor of Mathematics and Physics in the Yorkshire College, Leeds, and twelve years later succeeded Professor Guthrie in the Chair of Physics at the Royal College of Science, South Kensington. The esteem in which Professor Rücker is held in the scientific world, both on account of his researches and genial personality, is indicated by the position he occupies as Secretary of the Royal Society. He will retire from this office and resign his Chair at South Kensington, in order to take up the new post of Principal to which he has been appointed. Professor Rücker is an excellent speaker, and inspires admiration in all who hear him, by his decisive utterances and distinguished presence. He is a model of what a cultured man of science should be, and the University of London is fortunate in having secured him as Principal.

The Department of Public Education at Capetown publishes fortnightly an *Education Gazette* which contains lists of teachers wanted in State-aided schools and of teachers desiring posts in such schools. A considerable number of teachers in England and Scotland who desire to go to Cape Colony have their names and qualifications recorded at the Capetown Education Office. Secretaries of schools in the colony who wish to be put in communication with any of the above-named teachers are asked to apply to the Secretary, Education Office, Capetown. Teachers desiring to have their notices included in the above list should forward cuttings of their newspaper advertisements to the Education Office at Capetown. Every teacher included in the list is expected to communicate with the Education Office immediately an appointment is obtained. All teachers, however, will be removed from the list at the end of each quarter unless a written request to the contrary be received one week beforehand.

In order to afford some preparation for the examinations for the Commercial Education Certificates of the London Chamber of Commerce, it has been determined to institute, during the autumn, courses of lectures by capable exponents in subjects comprised within the scope of a higher commercial education. These lectures include such subjects as Commercial History, Commercial and Industrial Law, Commercial Geography, and Banking and Currency. It is also intended to arrange for lectures by high commercial and practical authorities on subjects which pertain to what has been aptly termed "the machinery of business" and the special operations of particular branches of commerce which, in the past, it must be admitted, have not been adequately taught in Great Britain as they have upon the Continent and in the United States, owing to the absence of the necessary teaching power. Encouragement will also be given to the teaching of foreign languages, in which connection the Spanish Chamber of Commerce in London is arranging for classes to be held in the rooms of the London Chamber to

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supply a deficiency in the means available for acquiring the Spanish language in a useful and practical form.

A COMPLETE and masterly review of the present condition and needs of English education from a correspondent to *The Times* appeared in its issue of September 5th, under the title of "Educational Reform—Possible or Practicable?" It is, the article points out, the organisation and direction of existing forces which is the real problem of educational reform, but the present Government appears neither to be in earnest in its half-hearted way of dealing with the task, nor alive to the educational needs of the country. The House of Commons does not like educational discussions, and the driving power of popular interest is wanting. As the Commissioners of 1868 said, "the real force, whereby the work is to be done, must come from the people." The German method of imposing a cut-and-dried system of education from above by statesmen and departmental officials will not suit our national temperament. Though it is weary work, and slow at the best, the surest method of securing a thorough and rational system of secondary education is generally to convince the voters of the imperative necessity there is for it, unless, that is, we are content to form the rear-guard in the fight for commercial supremacy.

MR. CLOUDESLEY BRERETON attended the recent summer meeting of the National Educational Association at Detroit, and addressed some four thousand American teachers on "The Educational Crisis in England." Mr. Fabian Ware, shortly after accepting an invitation to address the Association, had to leave for South Africa to report upon the educational needs of the new colonies, and American educationists are to be congratulated upon securing Mr. Brereton. An abstract of Mr. Brereton's address is published in the *New York Independent* for August 8th. After a sketch of the growth of our national system of education from the attempt of Mr. Whitehead in 1806 to deal with elementary instruction, down to the abortive enterprise of 1896, the address details the reason why, in the opinion of our most competent judges, the County Council is the only possible authority for local purposes if we are to have educational unity in England. But Mr. Brereton did not leave his hearers to imagine there was nothing to be said in praise of English education: "As one reared in the traditions of our English public schools who has breathed their subtle atmosphere, as strong and life-giving in its way as that of your American schools, who later on, as a teacher, has attempted to maintain and spread their high-soaring and deep-rooted traditions, I feel it is only fair to-night to express in public my eternal gratitude toward those public institutions which instilled into me, untoward scholar that I was, some scanty sense of the high ideals of patriotism, of *esprit de corps*, and of serving the State, of *noblesse oblige*, and the non-existence of rights unaccompanied by duties, of the virtue of self-control, of the spirit of never say die, of the belief in fair play, and other national qualities we deem belong pre-eminently to the Anglo-Saxon race."

MR. SARGANT, the new Director of Education for the Transvaal and Orange River Colony, is already getting matters straightened. We learn from *The Times* that he has held a very successful vacation course for teachers at Bloemfontein which was largely attended. The system of education to be introduced in the two colonies is to be uniform. Both colonies will be divided into educational districts, each under its own superintendent, who will be responsible for the standard of education in his own area. In the Orange River Colony it is hoped to secure colonials for these posts; in the Transvaal preference will be given to British public-school and university men. The salary of these inspectors varies from £400 to £600 with a residence, sufficiently attractive, we should think, to secure the right men.

THE Canadian Government again offer medals to the schools of the United Kingdom for competition with a view to encourage the study of the history, geography, and resources of the Dominion. One medal will be awarded to every school in which the matter is taken up and the conditions are complied with. Schools to which medals have already been given will be eligible for the further competition, but a second medal will not be given to any pupil. It is hoped, however, that a number of schools which have not taken part in previous competitions will take advantage of the present offer. Readers and atlases have been specially prepared for gratuitous distribution, applications for which will be dealt with according to priority until the available books are exhausted. The examination may take the form either of an essay on the general subject of Canada, or of answers to special questions formulated by the teachers. The two best papers in each school must be forwarded to Lord Strathcona for adjudication at the close of the term preceding the Easter holidays, 1902. All correspondence on the subject should be addressed to the High Commissioner for Canada, 17, Victoria Street, London, S.W.

SPEAKING at a recent educational conference at Simla, Lord Curzon gave it as his opinion that a mistake of Indian education has been a too slavish imitation of English models. If there is to be any great improvement in the education of India the tyranny of examinations must be abolished, and technical education must be extended by the creation of middle-class technical schools. Referring to the necessity for moral teaching, a *Times* telegram reports him to have said: "I am not inclined to find the solution in the moral primer or text-book that was suggested by the Education Commission. If pupils can cram Euclid there is nothing to prevent them from cramming ethics. I am not certain either that the moral precepts which we understand are as easily grasped by the native mind. The ideas of good and evil are equally entertained by East and West, but differently expressed. We must look for the religious instruction of Christian, Mahomedan, and Hindu to the private institutions where the tenets of those faiths are taught by their own votaries, to which we can lend the assistance of Government grants in aid."

THE new technical school which is about to be erected by the Cambridgeshire County Council was considered to be in some danger when a firm of brewers proposed to erect an hotel on the adjoining site. The Technical Instruction Committee instructed counsel to appear before the licensing justices of the Borough of Cambridge and oppose the application for a license for the hotel. The Court refused to grant the license.

THE summer course for teachers at the South-Eastern Agricultural College, Wye, concluded on August 30th. The object of the session was to develop a scheme of instruction suitable to the children of a rural elementary school, and the course, which dealt with the plant, air, water, and soil, had been previously put to a working test in the Wye Elementary School during the past two years. The lectures were followed by practical work in the laboratory, garden or field, so that the teachers could familiarise themselves with the construction of the necessary apparatus and the conduct of suitable experiments. Other instruction dealt with the management of school gardens, and the preservation and mounting of specimens of grasses, weeds, injurious insects, &c., for use in school demonstrations. There were also classes dealing with the management of fruit-trees, bee and poultry keeping, the elements of land measuring; and on the evenings of one week a course of lectures was given to illustrate some of the recent advances in chemistry.

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The Civil Service Commissioners have announced that an open competition for situations as Assistants of Excise in the Inland Revenue Department will be held in London and various provincial centres, commencing on November 12th, 1901. Not fewer than fifty-five candidates will be appointed on the result of this examination if so many should be found qualified. The limits of age for these situations are 19 and 22. Candidates must be of the prescribed age on the first day of the month in which the examination is held. The examination will be in the following subjects, viz. :—Handwriting; English composition, including orthography; arithmetic (to vulgar and decimal fractions); higher arithmetic, including mensuration, square and cube root, &c.; and geography, general. No subjects are obligatory. A fee of £1 will be required from each candidate attending the examination. Entry forms, obtainable from the Secretary, Civil Service Commission, London, S.W., must be returned to him on or before October 24th. Assistants of Excise receive salary commencing at £50 per annum, and rising by annual increments of £5 to £80. They also receive an officiating allowance of 2s. per diem when actively employed, and are eligible for promotion to higher rank.

SCOTTISH.

Sir Henry Craik's report just published upon the inspection of higher-class schools in Scotland is in many respects a most satisfactory document. The managers and governors of these schools are yearly taking a higher view of their duties and responsibilities, and are putting forth every effort to maintain the high traditions of Scottish education, and to enable it to meet the advancing requirements of the time. The report wisely contends that adequate provision for higher education is a matter of vital importance to every section of the community and not merely to one class, and that wise expenditure in this direction will ultimately prove of the utmost profit to the inhabitants of the district. It is disappointing to learn from the report that the national attitude towards education is not advancing *pari passu* with the provision made for imparting it. "It is matter for regret," Sir H. Craik says, "to find that where liberal provision has been made, the inspectors have so often to lament that the pupils are withdrawn at an age too early to benefit fully by it. This is one of the most serious difficulties secondary education in Scotland has to contend with. The only remedy for it lies in the growth of a more enlightened public opinion." The statistics furnished by Sir H. Craik in this connection are startling, and should put an end to long-cherished delusions as to the value set upon education by a considerable portion of the nation.

The report deals with the demand for education on commercial lines. The dissatisfaction of merchants with present methods is regarded as a healthy sign, as it shows that commercial men are realising the supreme importance of a sound mental training. They are told, however, that the remedy for the present state of affairs lies in their own hands. "The educational machinery of the country can never have a fair chance until merchants as a body set their faces against the practice of putting boys into business at 13 or 14, and until in their selection of apprentices they give preference and reasonable encouragement to those who can produce evidence of having profited by their school training." For many years teachers and school authorities made no attempt to relate the nature of the education in the schools to the necessities of practical life. This charge can no longer be upheld, for utilitarian or commercial education is everywhere the fashion of the hour. But the demand for this education by merchants is not great and the recompense for it is still less. It is to be hoped that Sir Henry Craik's remarks will obtain a wide circulation among the class to whom they are addressed.

The results of the Leaving Certificate Examination this year show a slight increase in the proportion of passes obtained when all the subjects are reckoned. In English with practically the same number of presentations the percentage of passes has risen from 48 to 56; while in French, with an increase of 185 in the presentations, the percentage of passes remains the same. In German and Greek the presentations and percentage of passes are both the same as last year. In Latin, with an increase of 165 in the presentations, the percentage of passes has decreased by five. The numbers presented in arithmetic rose from 9,191 in 1900 to 9,633 this year, but the percentage of passes fell from 54 to 50.

In the report on the examinations the Department defends the fluctuations which have characterised the results in past years on the ground of the variation in the intellectual average of successive sets of pupils and of the discretion left to teachers in determining the number of presentations. It may justly be pointed out that the wide area over which the examinations take place should almost neutralise these two causes. And both combined could not account for the serious variations in the percentage of passes which in some years have marked results. It is more natural to account for such fluctuations by variations in the papers set than by any extraordinary intellectual barrenness characterising all the children in Scotland in some particular year. Teachers do not ask for a *perfectly uniform* percentage of passes, as the report seems to imply, but they do claim that confidence in the examination can only exist when the variations in these results are kept within a narrow range.

IRISH.

His Honour Judge O'Connor Morris contributes to the *Fortnightly Review* for September a fair and critical consideration of the University Education question in Ireland. After an historical retrospect tracing the growth of the present condition of things, two general schemes of reforming higher Irish education are outlined and considered, the preference being given eventually to the latter. According to the first plan a national University would be set up in Ireland with power to confer degrees and honours; its governing body would be composed of the heads of the colleges to be connected with it, with no admixture of nominees of the Government. It would be independent, but receive adequate support from the State. Trinity College would remain intact, except that it would lose its power of conferring degrees. It would, with the Catholic University and the Queen's Colleges—those of Galway and Cork being perhaps suppressed, but Belfast College being left as it is, with the possible addition of a few other colleges—be affiliated to the University that would represent Ireland. The Catholic University would be reasonably well endowed, but would cease to be under Catholic Episcopal control, its governing body would contain a lay element, and its professors and teachers would not be exclusively Catholics. If the second scheme were adopted Trinity College would remain completely untouched, two of the Queen's Colleges would disappear as useless, but that of Belfast would be made a place of Presbyterian learning, with the power to confer degrees and with increased endowments. It would become a University in the proper sense. The Royal University would continue to be an Examining Board empowered to grant degrees. The Catholic University and its dependent colleges would receive full recognition from the State, be supplied with suitable buildings and funds, and have the power of bestowing degrees. Its governing body would in

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part be composed of laymen, its professors and teachers would not necessarily all be Catholics. With Judge Morris, we trust the Commission which has now been appointed will lay down the lines of an equitable, comprehensive, and wise reform.

IN the results of the Intermediate Examinations held in June (the last under the old system), the most remarkable feature is the extraordinary success of the Catholic schools—a success which has been growing from year to year for some time. In the number of distinctions won, the school of the Christian Brothers, North Richmond Street, Dublin, heads the list with a total of 78, and is followed by five other Catholic schools, Campbell College, Belfast, occupying the seventh place with a total of 32, being the first of the Protestant boys' schools. In regard to the exhibitions won—the most valuable prizes—the ten first places are occupied by Catholic schools. Out of a total money value of £9,772 given in prizes, Catholic students obtained £7,218.

IN the girls' list the .Protestant schools occupy a high position, taking the first place in all the grades except the preparatory. In the number of exhibitions won, the first places are held by St. Louis' Convent, Monaghan, and the Dominican Convent, Dublin, with 14 and 12 exhibitions respectively. In the list of the total number of distinctions won, the first two places are held by the Dominican Convent, Dublin (39), and Victoria High School, Derry (34), the latter being a Protestant school. Out of a total money value of £4,277, the Catholic girls' schools carried off £2,754 in prizes. It must be remembered that the Catholic schools have very much larger numbers from which to send in candidates.

DURING the latter part of August and the first half of September, Mr. Louis von Glehn gave very successful courses of lectures with criticism lessons in "The New Method of Teaching Modern Languages" in the Dominican Convent, Cabra, near Dublin, and in Alexandra College, Dublin. The courses were attended by large numbers, and much of the time was spent on demonstrations in the teaching of phonetics.

WELSH.

A VACANCY in the Headmastership of the Carnarvon County School is caused by the resignation of Mr. Trevor Owen consequent upon his appointment to succeed Dr. G. S. Turpin as Headmaster of the Swansea County School. Carnarvon is of course a very important centre of a Welsh-speaking district. It is one of the chief towns in North Wales for the publication of books in Welsh. The question, therefore, of the condition that candidates should be Welsh-speaking naturally arises. On Mr. Owen's resignation, the County Governing Body discussed the drawing up of the advertisement. One member urged that the qualification of Welsh-speaking should be inserted, on the ground that he did not like to see a number of Englishmen making applications when the language question weighed heavily against them. Another pointed out that there were Welshmen who had secured good positions in public schools in England. Another member stated that recently a County Governing Body stultified itself by appointing an Englishman in the teeth of their own advertisement. Mr. Allanson Picton put the position clearly in saying that no doubt it was desirable to have a headmaster who could easily understand and speak Welsh, but it was undesirable to narrow the area of selection. If there were some specially qualified man who could not speak Welsh, the teaching of Welsh could be provided for otherwise. It was decided by a large majority that no reference to Welsh-speaking should be made in the advertisement.

MR. CHARLES C. ROGERS, Chairman of the Radnor County Council and the Radnor County Governing Body (Intermediate Schools), has written an able and interesting pamphlet on "Intermediate Education and Rural Exodus." Mr. Rogers faces the objections to the Intermediate Schools urged by the "unbelieving agriculturists," by the "reluctant elementary school managers," and by "stony-hearted parents." With regard to the agriculturist, the answer given is that it is true that our system of prolonged education does not turn out the old-fashioned labourer of a bygone day, but, it is to be trusted, more hopeful and promising men and women. As to elementary school managers: "If, say, five children are successful and leave the elementary for the intermediate school a year before their time, not only is it a case of Ichabod, the honour and glory departs, but money flies out of the window. Each of these children, if they go, represents a loss to the school of 30s., or more often 37s., *e.g.*, attendance grant, 22s.; free grant, 10s.; aid grant, 5s. So their foundation, financial and honorific, is shaken." Mr. Rogers' suggestion as a remedy is: "That Parliament should make good this small sum of money."

THERE is no doubt that it is a pressing question how to overcome "stony-hearted parents." The making of 5s. or 6s. a week by the boy is to so many parents sufficient reason for depriving the boy of a more prolonged education. 6s. a week, as Mr. Rogers points out, in two years would amount to £31 4s., but an additional two years' more education would soon repay the weekly 6s. sacrifice. This is the answer to the agriculturist, the school managers and the parent. The boy will be worth more. Mr. Rogers estimates the cost of education in the county schools at £14 per head per annum, and pupils are only charged £6—putting aside any question of bursaries. The subjects of teaching in the county schools can be made available for rural pursuits, so as to improve the child for rural life. It is the adaptability of the schools for producing increased enjoyment and power which should become the means more than anything else to moderate the rural exodus.

MR. ROGERS' position is that there are openings in rural work for educated boys as promising as those in ordinary town life. "The lonely labourer on the land, *had he enterprise and education* to back up his efforts, might become a manager of labour, an organiser, a contractor of work in the country." And much more, the mechanically-minded youth who had had a sound secondary practical education. The fact is that intelligent workers are as rare—probably rarer—in the country as in the town. It is no difficult task to show that in both intelligent, well-trained boys and girls are wanted. But Mr. Rogers is doing splendid work in urging parents to believe that the country districts require educated workers, and that their children may go further afield and fare a great deal worse, through not seeing the possibilities at their very feet—once more—for the intelligent, trained man and woman.

CURRENT HISTORY.

OUR "talking-thing" (translate into French, if the English is unfamiliar, and then say why the French is more familiar than the English) is "taking its well-earned rest," and the newspapers have given their opinion on its work since last February, coloured more or less according to their party bias. Are we any worse off for its taking vacation? Does Government not work as smoothly (perhaps, indeed, more smoothly) while it is impossible to occupy two or three hours five days in the week "asking questions" which are not always for information only. Yet we judge the past history of our country as if Parliament were the all in all, and, like the historians of the Old Testament, call kings good or bad according as their policy squares or otherwise with our quite modern conception of what ought not only to be, but also to have been from the beginning. Charles I. is a "tyrant" because he did without Parliament for

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eleven years. William III. is a hero because the "glorious Revolution" gave us not only him but a yearly sitting of Parliament. And we are not consistent, even in this. For we dislike Edward I., though he is the founder of Parliament (in so far as any one is so), because he "slew the Welsh bards"—do we not all know "Ruin seize thee, ruthless king"?—and hanged a Scottish hero—Wallace. And we call Elizabeth "good Queen Bess," though she met Parliament but once in four years, treated them masterfully while they were sitting, and so limited their duration that in all they sat for less than four years during her forty-five years' reign. O for some lucidity!

Great Britain is "an Empire on which the sun never sets." Some of our readers may have heard of the humorous yet accurate addition, "and in which the tax-collector never goes to bed." Few will perhaps have heard of the Yankee's retort: "That's because the Almighty couldn't afford to leave you Britishers in the dark!" In these modern days, we might suggest another appendix. No sooner does the Brito-Irish parliament which attends to the affairs of these Atlantic islands, as well as to the interests of the whole empire, get to its grouse and partridge shooting than our cousins of the antipodes begin to meet for palaver. The Anglo-Saxon race, whether in Europe, America or Australia, has a perennial power of discussion. Of the many advantages thence derivable we need not speak. The most important is the ease with which our rulers can learn of our desires. No Anglo-Saxon Eglon need ever fear a left-handed Ehud. We should have formed a Society with Secretary and Treasurer, annual reports and newspaper correspondence, if we had been Israel in the days of the Judges. But our antipodean fellow-citizens talk less in proportion to their acts than we do at Westminster. Why? Is it not because they have practically no foreign policy? They therefore give themselves to the more practical schemes of constitutional and social reform, and are working out for us many schemes by way of initial experiment from which the next generation may learn much if it will study contemporary history.

There seems to be much unrest in Latin Europe. France has been legislating against religious orders. Anti-clerical tumults occur now and again in the Iberian and Italian peninsulas. And now the Archduke Franz Ferdinand has roused public opinion in Austria-Hungary by becoming the patron of a Catholic association. A Moravian paper is reported as saying:—"The Catholic population has long been prepared and is now only waiting for a leader. Now that it has found one, the emancipating force of Christianity will soon rid the whole Empire of all the diseases of Liberalism and Radicalism." Probably this would need explanation for the majority of our readers. We do not propose to say more than that it does not necessarily follow from a person agreeing in his christianity with the Bishop of Rome that he is not anti-clerical, much less that he approves of the action of all the societies that exist within that church. One of the greatest episodes of European history in the latter half of the eighteenth century will illustrate this. The Society of Jesus, which had been founded by Ignatius Loyola in the sixteenth century, had, by 1760, become an object of great dislike to many. Specially was it displeasing to the "reforming" monarchies of Portugal and Spain and the "philosophers" of France, as well as the Parliament, who were naturally opposed to the great international advocate of the fullest powers for the Holy See. In the light of current events, it should not therefore surprise the intelligent reader that it was exclusively Catholic States that first expelled the members of the Society from their dominions, and that these found a refuge in the lands of Protestants. Incidentally, too, it illustrates the strength of the Bourbon Family alliance which was originally framed against Great Britain and which was so close in the years 1761-81 that it was exclusively and inclusively the Bourbon Powers that drove one Pope to death, and compelled another to submit to their demand that the Society of Jesus should be suppressed. Even Portugal was not included in this part of the anti-Jesuit programme.

RECENT SCHOOL BOOKS.

Modern Languages.

Thiers, L'Expédition de Bonaparte en Egypte. Edited by C. Fabregou. iv.+99 pp. (Isbister.) 1s. 3d.—This is a text of moderate difficulty and will prove of considerable interest to intelligent pupils. The editor supplies a brief introduction, a good map of Egypt and Syria, and fifteen pages of short, serviceable notes. The book is well printed.

German Lyrics and Ballads. Selected and arranged by J. T. Hatfield. xxix. + 224 pp. (Isbister.) 2s. 6d.—This is a very convenient selection of German poems, well printed and cheap. The editor has done his work satisfactorily, on the whole; he seems to know German literature well, and only his English is faulty. He writes a style which is becoming distressingly common in the "editorial" part of American modern-language books. In many cases it is due to a Germanising tendency, apparently. Professor Hatfield was fortunate in securing permission to include a number of copyright poems by such writers as Isolde Kurz, Rudolf Baumbach, and Otto Roquette. His notes are useful, and he has given short biographies of the poets who are represented in his anthology.

Edelsteine. Six Select Stories by Baumbach, Seidel, and Volkmann-Leander. Edited by R. A. Minckwitz and F. von Unwerth. xiii.+132 pp. (Ginn.) 2s. 6d.—These are nice little stories, but hardly deserve the pretentious title under which they here appear; and the tales by Baumbach, which are frankly fairy tales, are curious company for Volkmann-Leander's *Die Rumpelkammer*, and for Seidel's *Der gute alte Onkel.* There is a foolish little introduction, in which we are told, for instance, that "personality and fate—which nowadays perhaps more than at any other period in the history of mankind dally with the individual, especially in the beginning of his career, as the waves of the ocean play with the yet inexperienced pilot—had much to do with the final direction of their characters." Again, some lines of poetry are rendered: "With longings in the lilacs, plains the lover nightingale." There are also adequate notes and a vocabulary.

Charlotte Niese, Aus dänischer Zeit (Selections). Edited by L. Fossler. x. + 103 pp. (Ginn.) 2s.—Five capital short stories, suitable for reading with a fairly good class. There is much truthful and kindly observation of human nature, and the style is good. The notes will serve, though they are here and there disfigured by Americanisms.

Schiller, Wilhelm Tell. Act I., being the first volume of the Ideophonic Texts for Acquiring Languages. Editorial Critic: G. Hempl. xxvi. + 239 pp. (Hinds and Noble.) 4s.—This is a most saddening piece of work. To see Tell quartered in this way is more than anyone endowed with the least respect for great literature can endure. The text appears (1) in the transcript of the *Association Phonétique* (not, however, in *Bühnendeutsch*, but in Professor Hempl's pronunciation); (2) in the ordinary spelling; (3) in word-for-word English ("it smiles the lake," "carry the good-man thither-over," "a heavy

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storm is in the on-draw"); (4) a free translation. If the phonetic part were in standard German, and were consistently printed, there would be some value in this production; as it is, we do not expect to see the remainder of Tell appear in this painful form.

French Course. By G. H. Williams. xi.+220 pp. (Moffatt and Paige.) 2s. 6d.—This is the seventh edition, "carefully revised and enlarged." The chief value of this book lies in the large number of good examples of various points in French grammar; in each case the French and a good English rendering are given in parallel columns. A teacher will find it useful for revision work or test papers. We submit a few suggestions to the author for his next edition. On p. 19 a few examples with *moins* might be added. On p. 31 there is no instance of the use of *sur* ("by") with numbers. On p. 71 it should be *Je ne saurais vous le dire.* On p. 81 *vert bouteille* should have no hyphen. On p. 101 (four lines from the bottom) *mur* should have no circumflex. In a number of instances letters, &c., have been lost at the beginning or end of lines, owing to the plates being worn down.

A Concise Dictionary of the French and English Languages. By F. E. A. Gasc. xii. + 941 pp. (Bell.) 3s. 6d.—This author's numerous books for the study of French have long enjoyed a wide popularity, and his standard dictionary, which has reached its eighth edition, is well known to most students of French in this country. The present volume is an abridgment of the larger work and is intended especially for the middle forms in secondary schools. Its moderate price, the inclusion in its columns of more or less technical words comparatively recently introduced into English, such as "book-post," "postal order," "shoddy," together with a sound knowledge of idiomatic English on the part of the author, will, we are confident, ensure for the volume an extensive use and a large sale.

Edited Books.

The Dunbar Anthology. By Professor E. Arber. 312 pp. (Henry Frowde.) 2s. 6d.—An anthology compiled under the name of Henry Dunbar, and dealing with his somewhat unfamiliar time, possesses an antiquarian interest almost as great as the literary excellence which is assured by its place in this series of books. Naturally, the number of poets who can be disinterred from that obscure period of the past is not large, and in this volume anonymous poems abound. Dunbar himself is represented by a selection which only runs to forty-nine pages: and only eight other authors' names are found, two of which, however, are distinctly uncommon, Dame Juliana Bernes and Thomas Feilde. A small selection from the by no means despicable work of Charles de Valois is also included, and Anthony Woodville, better known to students of Plantagenet history as Earl Rivers, is represented in a vein which will surprise many who hardly suspect the existence of this phase of his character. The anonymous poems of course include the "Battle of Otterburn" and "Chevy Chase," without which no account of this period could be considered complete; and Thomas Occleve's Tributes of Honour to Geoffrey Chaucer are a most interesting survival. "Life and Death," also included as anonymous and presented with all needful helps to the interpretation of its alliterative measures, is an undoubted "find" for the modern student. That the first shall be last in this series is aptly illustrated by the appearance of this volume, which is number one, at the very end of the edition; but from first *to* last the workmanship is excellent, and the undertaking deserves the support of all lovers of literature.

Gray's Ode on the Spring and Elegy. By D. C. Tovey, M.A. 67 pp. (Cambridge University Press.) 8d.—Slight but full, brief but useful, with an introduction that is delightful and notes that are exceptionally full of literary interest, this is a serviceable and a scholarly edition of a poet whose works Mr. Tovey has made peculiarly his own. The pages of this booklet are also enlivened by some most interesting illustrations of certain shortcomings in criticism on the part of that solemn dictator of the eighteenth century, Dr. Johnson.

Handbook to Judges and Ruth. By Rev. G. H. S. Walpole, D.D. 200 pp. (Rivingtons.) 2s. 6d.—All the excellent features which have enriched previous volumes of this well-known series of "Handbooks" are continued herein, although the introduction to the Book of Ruth appears to eschew some views which modern literary critics hold, and that to the Book of Judges might have been conceivably fuller without overburdening the minds of the class of student-teachers for whom the book is prepared. The blackboard lessons are admirable, and the notes sufficient and clear.

Old English Reader. Edited by A. J. Wyatt, M.A. vii. + 177 pp. (Cambridge University Press.)—Some time ago Mr. Wyatt produced what is probably the most practical elementary text-book on Old English Grammar available for English students. The plan adopted therein of giving only the Early West Saxon forms is followed in the companion volume now before us. An editor has but little choice of manuscripts in this form—the "Chronicle" (Parker MS.) and the translations of "Orosius" and the "Cura Pastoralis" by King Alfred; but this is ample enough material for an introduction to Old English prose, and this, we take it, is all the book is intended to be. About forty pages of notes and a well drawn-up glossary combine to make the "Reader" a very useful little work. It is to be hoped that the day is not far distant when Old English will take its proper place in our schools; in which case Mr. Wyatt's is sure to be the standard text-book. There are two respects in which we think a slight improvement might be effected:—(1) give the "principal parts" of the verbs in the glossary, and (2) mark the long vowels in the text as well as in the glossary.

Kenilworth. Edited by E. S. Davies. 488 pp. (A. and C. Black.) 1s. 6d.—Among the several volumes in this edition already published this is perhaps the best deserving of praise. The editor has done his work with evident pains, and the introduction which he has furnished to this volume it is a pleasure to read. The section dealing with Elizabeth in her relations with the Earl of Leicester is most judicious, and a better account of that rather extraordinary ornament of a very extraordinary Court it would be somewhat difficult to find; indeed, each section in this part of the volume shows evidence of thoroughgoing research. The notes are neither long nor many: a little more space devoted to some of the literary explanations would have improved the volume. The historical notes are all good, and a rendering of a passage from Boiardo by Scott himself included amongst them will be new to many who are not unfamiliar with most of Scott's work, whose ingenuity in turning six consecutive lines with one rhyme in this example is extraordinary.

History.

Rome the Middle of the World. By Alice Gardner. xii. +260 pp. (Arnold.) 3s. 6d.—We are glad to see that this book has reached a second edition. It is an excellent "introduction to Mediæval History for Young People," and we should like cordially to recommend it to teachers who are thinking of sending their pupils in, some day, for the Oxford Local, Cambridge Higher Local, or any other examination where non-English Modern History is required. It would do equally well as a book for a school library, or as a prize, reward or gift; it has the "staying power"—*i.e.*, it interests now and in after life—which should characterise such books; and eight good

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illustrations greatly add to its charm. Miss Gardner's main object is to impress upon young folks that lesson of the unifying function of Rome which Professor Freeman was never tired of teaching to grown-ups. This she does in fourteen well-chosen and well-told tales of Roman history from Augustus to Charles V. Her scheme of studying history is thoroughly sound: "to acquire first a strong impression and an accurate knowledge of a few luminous patches of history, and to fill up gradually the duller places between as time goes on."

Miscellaneous.

The Labyrinth of the World and the Paradise of the Heart. By John Amos Komensky (Comenius). Edited and translated by Count Lützow. 347 pp. (Swan Sonnenschein.) 6s.—Count Lützow boldly claims the "Labyrinth of the World" as Comenius's masterpiece and as one of the world's great books. Comenius pictures the world as a city and man as a pilgrim who wanders in it. He sees the evil in the "Labyrinth," and in the "Paradise" he finds his solace whilst still on earth. Count Lützow gives an interesting account of "sources." He traces reminiscences or suggestions to Kebes, to Sir Thomas More's "Utopia," to Campanella's "Civitas Solis," and to John Valentini Adreac's "Republicae Christianopolitanae Descriptio." On the other hand, he considers there is no trace in the book of Bacon, whose "New Atlantis" belongs to the same class of work. The following passage in Count Lützow's introduction will constitute a high claim on English people to give a hearty reception to his book. "Of all tales, the one that bears most resemblance to the 'Labyrinth' is the 'Pilgrim's Progress.' In both books a pilgrim passes through the evil world, with its great suffering and its many temptations. Evil guides lead astray both Komensky's and Bunyan's pilgrims, and both finally find perfect happiness and solace of their sorrows by means of God's grace. There are many minor resemblances." Count Lützow's wide knowledge is very marked and very helpful in the Introduction. English readers will be grateful to the translator for his Introduction and for the access which he has given to this Bohemian treatise, which is of such unusual interest. Students of education will be amongst the foremost to be interested in Comenius's "Labyrinth," for it has virtually been an unknown book.

Student's Slide Rule. (Aston and Mander.) Most students of applied mathematics are probably familiar with the "Gravet," or some similar form of slide rule which costs about 10s. 6d. This is an attempt to provide for 4s. 6d. a slide rule which may be used for some of the many purposes to which the more costly instruments can be applied. It consists of a box-wood frame about 12 inches long and a sliding piece; three of the four usual scales are provided, two being marked on the frame, and the remaining one on the sliding piece. The scales are very clear and legible, and the instrument will be found useful in the processes of multiplication, division, proportion, and to some extent for involution and evolution. But as there is no "cursor" supplied it is not an easy matter, since the top and bottom scales are necessarily separated a distance equal to the width of the sliding piece, to estimate with accuracy the fractional part of a division which is opposite a given number the root or power of which is required. The further absence of one of the usual scales renders it a difficult matter to use the rule for extended operations in multiplication, division, &c. There are no scales marked on the back of the sliding piece, so that all operations are confined to the scales mentioned. On the back of the frame two scales are provided, one showing inches subdivided into eighths of an inch, the other centimetres subdivided into ten, thus forming a millimetre scale. Some difficulty may be experienced in using these scales, as the thickness of the frame is about one-quarter of an inch and its edges are not bevelled. Students and others who require a handy instrument for the processes referred to will find it very useful. A small pamphlet containing instructions how to use the rule is presented with it.

SECOND CLASS (JUNIOR) COLLEGE OF PRECEPTORS, DECEMBER, 1901.

Revision Test Papers.

English Grammar and Composition.

Write out in two parallel columns the words not fully given in the following passage:—

History is not int-l-gble (1) without g-graphy (2). This is obv-sly (3) true in the sen-e (4) that the reader of history must learn where are the front-rs (5) of states, where wars were fought out, whither colon-s (6) were d-spatched (7). It is eq-lly (8) if less manifestly true that g-graphical facts very largely infl-nce (9) the co-rse (10) of history. Even the constitu-al (11) and so-al (12) developments (13) within a settled nation are scar-ly (14) independent of them, since position -fects (15) the nature of interc-rse (16) with other nations, and th-fore (17) of the control exerted by for-n (18) ideas.

(1) Analyse:—

That's a fault. *That* handkerchief
Did an Egyptian to my mother *give*;
She was a *charmer*, and could *almost* read
The thoughts of people; she told *her*, *while* she kept it
'Twould make her *amiable* and *subdue* my father
Entirely to her love.

(2) Parse fully the words in italics in No. 1.

(3) Explain what is meant by: — strong verb, verb of incomplete predication, diphthong, phonetic spelling, prepositional phrase.

(4) What is meant by the comparison of adjectives? What classes of adjectives cannot be compared?

(5) Give the 1st person singular of the past tense, and the two participles of:—singe, refer, lay, light, differ, seek, bet, make.

(6) Distinguish carefully between conjunctions, adverbs, and conjunctive adverbs.

(7) What is there faulty in the syntax or diction of these sentences:—

(1) The water gets hotter by degrees.
(2) All men are not blind.
(3) The man whose life the brave officer tried and saved, strange to say, bore the same name that he did.
(4) In addition to the officials less than fifty persons were present.

Subjects for Essay. (*Half an hour.*)

(1) Wireless Telegraphy.
(2) Christmas Holidays.
(3) Museums.

English History, 1066-1603.

(1) Describe briefly *either* (*a*) the steps by which William of Normandy completed the conquest of England, *or* (*b*) the objects and the methods adopted in compiling Domesday Book.

(2) State the nature of, and the objections to, the claims of (*a*) Stephen, (*b*) Henry IV., (*c*) Elizabeth, to the English throne. (Either treat any one of these thoroughly or give the main points in all.)

(3) What were the chief characteristics of *either* (*a*) Mediæval chivalry *or* (*b*) Elizabethan maritime enterprise?

(4) Tell the story of one of the following campaigns (*not* battles): (*a*) Agincourt, (*b*) Cressy, (*c*) Flodden.

(5) Describe *either* (*a*) the English "Conquest of Wales" *or* (*b*) the English "Loss of France," remarking on the meaning of the geographical terms employed in either case.

(6) Name not more than half-a-dozen leaders of popular risings during this period, and briefly indicate the time, circumstances and objects of each rising.

(7) Write an account of Ireland in the time of *either* (*a*) Henry II. *or* (*b*) Elizabeth. Do you know any allusion in Shakespeare to Ireland or the Irish?

(8) Mention and state concisely the importance (*not* the full terms) of any *one* notable constitutional document in each of the following reigns: (*a*) Henry I.; (*b*) Henry II.; (*c*) Henry IV.; (*d*) Henry VIII.

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Geography.

Seven questions only may be attempted. Three must be taken from Section A, and the remaining four from one of the other sections.

SECTION A. GENERAL.

(1) Name the States drained by the Danube. Give the capital of each, and say how it is governed.

(2) Explain the meaning of:—water-parting, escarpment, delta, desert, trade winds, climatic zone, continental shelf.

(3) Describe, as accurately as you can, the position of Hudson's Bay, the Rio de la Plata, the Straits of Magellan, the Crimea, Norfolk Island, the Riviera, the source of the Mississippi.

(4) Give one example of each of the following:—tideless sea, continental island, natural frontier, deforested region, coastal plain, drowned valley.

SECTION B. ENGLAND AND WALES, BRITISH SOUTH AFRICA, FRANCE.

(1) A steamer recently left Fowey (Cornwall) for Leeds. Describe the voyage, naming the counties and ports that it passed. Of what, do you suppose, did its cargo consist?

(2) Give reasons for:—(*a*) the cotton manufactures of Lancashire, (*b*) the biscuits of Reading, (*c*) the shipbuilding of Barrow, (*d*) the chemicals of Newcastle, (*e*) the flannel of Dolgelly.

Where are the naval arsenals and dockyards of England and Wales?

(3) On an outline map of South Africa insert:—the Orange River with its tributaries, Table Bay, Algoa Bay, the boundaries of Natal, the main watershed; Kimberley, Bulawayo, Port Elizabeth, Johannesburg, Lorenzo Marques.

(4) Give an account of the climate of Cape Colony and its vegetable products.

(5) Show how the climate of France is controlled by the distribution of highlands and lowlands.

What is the *mistral*?

(6) What do you know of Nantes, Marseilles, Pau, Vichy, the Landes, Lille?

Where are the chief wine-growing districts?

SECTION C. BRITISH ISLES AND ASIA.

(1) How do you explain the commercial superiority of the British Isles?

(2) Mark on an outline map the position of the following, showing the courses of the rivers named:—Shannon, Yarmouth, Spey, Oxford, Limerick, Thames, Loch Neagh, Connemara, Glasgow, Berwick, Kinderscout, Thirlmere.

(3) Whence does the United Kingdom import:—butter, timber, cotton, silk, tea?

What effect has the application of steam-power to machinery had on the location of textile manufactures?

(4) What are the monsoons? Indicate their effect on the fertility of various parts of the continent.

(5) Show how the flora and fauna of Asia vary with the latitude.

(6) On an outline map of India trace the courses of the Ganges and the Indus; insert the Ghats, Mt. Everest, and the Khaibar Pass; mark the positions of Colombo, Delhi, Benares, Nagpur, Mandalay, Calicut.

SECTION D. PHYSIOGRAPHY.

(1) Explain the relationship between longitude and time. Describe fully one method of determining longitude.

(2) What is an iceberg? How do you suppose icebergs to have been formed? Why do icebergs float with part of their mass above the sea? What is the proportion of the part above the water to that below?

(3) What is the source of the water that falls as rain? What becomes of it when it reaches the ground? How do we indicate the quantity of rain which falls upon a given place during a year?

(4) Point out the errors in the following statements:—"Earthquakes have raised to heaven the ocean-bed." "Coral insects are industrious insects that cleverly build up islands." "Coal is a mass of leaves pressed together in the earth."

(5) Why are warm ocean currents, like the Gulf Stream, confined to the surface of the ocean? Why do the lower parts of the ocean never become warm?

(6) Describe, with examples, the action of rivers (*a*) in forming new land; (*b*) in shaping the general surface of a country.

Arithmetic.

(1) An agent to a certain firm receives a commission of 2s. 3d. in the £ on all business he introduces; his average monthly commission is £15, what is the value of the business introduced in a year?

(2) Simplify: $\frac{5}{8}$ of $7\frac{1}{5}$ of $\dfrac{4\frac{7}{18}+11\frac{3}{8}}{9\frac{1}{12}-5\frac{1}{10}}$.

(3) Reduce 150 yards to the decimal of a kilometre, correct to 3 decimal places, assuming 1 kilometre = 1093·613 yards.

(4) How many lengths of 12·45 cm. each can be taken from a strip of cloth 3·27 metres long, and what will be the length of the remaining piece?

(5) A field is enclosed with a barbed wire fence in which are four rows of the barbed wire; find the cost of the wire if the distance round the field is 1 mile 244 yards, and the cost of one ton of wire is £14. (The weight of 100 yards of wire is 25 lbs.)

(6) What will be the amount of £3,425 in 219 days at 4 per cent. per annum, simple interest?

(7) Extract the square root of 5043·130225.

Find the length of the side of a square plot of land $2\frac{1}{2}$ acres in extent; and the cost of making a pathway, 6 feet wide, immediately outside the field, at 9d. per square yard.

(8) The number of parcels delivered in the United Kingdom during the past year (1900-1) by the Government Post Office was 81,017,190; this was an increase of 7·4 per cent. on the previous year; what number was delivered in that year?

Further, of the 81,017,190 parcels delivered in 1900-1, 69,612,956 were rail-borne; what percentage did not pass over a railway?

(9) The weight of a bar of iron, the length of which is 4 feet and sectional area $2\frac{3}{4}$ inches square, is 100·84 lbs.; find the weight of a bar, $6\frac{1}{2}$ feet long, the sectional area of which is $6\frac{1}{2}$ inches square. (Correct to the nearest lb.)

(10) A and B are partners, A's capital being £1,890 and B's £2,700. 15 per cent. of the profits is paid to A for managing the business, and the remainder is divided between them in proportion to their capital. B receives as his share £350; what does A receive?

Answers.

(1) £1,600. (2) 25. (3) ·137. (4) 26; 3·3 cm. (5) £12 10. 6d. (6) £3,507 4s. (7) 71·015; 110 yards; £33 12s. (8) 75,435,000; 14% nearly. (9) 880 lbs. (10) £350.

Algebra.

(1) When $a=5$, $b=-3$, $c=3$ and $d=-2$, calculate the simplest form of the numerical value of

$$\sqrt{\left\{\frac{2a^2b^2-c^4d^2}{a(c+d)-b(a+d)}\right\}}.$$

(2) Find the square of $x^2-\frac{x}{2}+\frac{1}{4}$ and the square root of $4x^2+y^2-4xy+z^2-2yz+4zx$.

(3) Resolve into factors:—(i.) $x^2+3x-10$; (ii.) x^2-y^2+4y-4; (iii.) $6x^2-5xy-6y^2$.

(4) Find the H.C.F. of the two algebraical expressions the sum of which is $4x^3-18x^2+32x-21$ and the difference of which is $4x^2-8x+3$.

(5) Solve the equations:—

(i.) $\frac{1}{3}(4x-7)-\frac{1}{4}(x-3)=\frac{1}{6}x-3\frac{5}{12}$;

(ii.) $\dfrac{x-a}{b}=\dfrac{a^2-b^2}{ab}-\dfrac{x+b}{a}$;

(iii.) $\frac{1}{2}(7x-3y)=18(2x+y)$

$\frac{1}{7}(5x-4y)+\dfrac{3y}{2}=2\frac{1}{2}$.

(6) Simplify:—

(i.) $\dfrac{x^2-3ax+2a^2}{x^2-2ax-3a^2}\times\dfrac{x^2-7ax+12a^2}{x^2-8ax+12a^2}\div\dfrac{x^2-5ax+4a^2}{x^2-11ax+30a^2}$

(ii.) $\left(\dfrac{a+b}{1-ab}-a\right)\dfrac{a}{b}\div\left(1+\dfrac{a(1+b)}{1-ab}\right)$.

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(7) An express train travels a miles in b hours, with one stop of five minutes; an ordinary train will cover the same distance in c hours, stopping twenty-five times, the average length of each stop being three minutes; how many miles will each travel in *one* hour, supposing each to move at an uniform speed between stations.

If $b = 2\frac{1}{4}$ hours and $c = 4\frac{1}{3}$ hours, compare the rates of speed of the two trains.

(8) A gentleman buys a bicycle at a certain price; he spends in repairs $\frac{1}{20}$th of its value in the first year, $\frac{1}{15}$th in the second year and $\frac{1}{8}$th in the third year: he then sells it for one half of its purchase price and finds that his complete expenditure for the three years has amounted to £8 18s. What was the original price of the machine?

(9) Solve the equations:—

(i.) $x(4x-3)-12=x+3$;

(ii.) $\frac{1}{x-3}=\frac{1}{x}+\frac{1}{2}-\frac{1}{5}$.

Answers.

(1) 3. (2) $x^4-x^3+\frac{3x^2}{4}-\frac{x}{4}+\frac{1}{16}$; $2x-y+z$.

(3) (i.) $(x+5)(x-2)$; (ii.) $(x-y+2)(x+y-2)$; (iii.) $(3x+2y)(2x-3y)$.

(4) $2x-3$. (5) (i.) -2; (ii.) $2(a-b)$; (iii.) $x=-3$, $y=5$.

(6) (i.) $\frac{x-5a}{x+a}$; (ii.) a. (7) $\frac{12a}{12b-1}$ miles; $\frac{4a}{4c-5}$ miles; $\frac{3}{2}$.

(8) £12. (9) (i.) $\frac{5}{2}$, $-\frac{3}{2}$; (ii.) 5, -2.

Euclid.

A.—BOOK I.

(1) Define a parallelogram, a rectangle and a square.

What axiom is assumed in the statement, "All squares are equiangular"?

Prove that the diagonals of equal squares are equal. (Use the fourth proposition.)

(2) Draw a perpendicular to a given straight line from a given point within it.

(3) If from a given point within a triangle straight lines be drawn to the extremities of the base, these two straight lines shall be together less than the two sides of the triangle.

The straight lines joining any point within a triangle to the angular points is less than the sum of the sides.

(4) ABC is a right-angled isosceles triangle with the right angle at B; any point D is taken in BC, and BC is produced to E, so that CE equals BD; DF and EF are drawn at right angles to AD and BE respectively and meet in F; show that AD equals DF, and that CF is at right angles to AC.

(5) Define parallel straight lines.

The straight lines which join the extremities of equal and parallel straight lines towards the same parts are themselves equal and parallel.

ABC is an equilateral triangle, and the external angles at A and C are bisected by the straight lines AE and CE; prove that AE is equal and parallel to BC.

(6) If the square on one side of a triangle be equal to the sum of the squares on the other two sides, then the angle contained by these two sides is a right angle.

Two squares are given of which the area of one is twice the area of the other; show that a side of the first is equal to a diagonal of the second.

B.—BOOK II.

(7) If a straight line be divided into any two parts, the rectangle contained by the whole line and one of the parts is equal to the square on that part together with the rectangle contained by the two parts.

AB is a straight line divided into any two parts at C; AB is produced so that the square on BD is equal to the rectangle contained by AB, BC; show that the rectangle contained by AB, CD is equal to the rectangle contained by BD, AD.

(8) Divide a straight line into two parts, so that the square on one part may be equal to the rectangle contained by the whole line and the other part.

What other lines in your figure of construction are divided in the same way?

C.—BOOK III., PROPS. 1-19.

(7) Find the centre of a given circle.

The diameter of a circle which cuts any chord at right angles also bisects it.

Thence show that the middle points of parallel chords lie on a diameter.

(8) Equal chords in a circle are equidistant from the centre.

OPQ, ORS are two straight lines drawn from an external point O to cut the circle PQSR; if the chord PQ equals the chord RS, show that OP equals OR.

French.

Candidates must satisfy the Examiner in two parts of this paper.

I. Translate into English:—

Un jour où j'étais dans la cour de notre ferme, juché sur une charrette pour décharger du foin et le rentrer en grange, occupation dont je m'acquittais en chantant, M. le curé s'arrêta devant la porte de la cour et se mit a m'écouter. J'étais timide et sauvage à l'excès; je feignis donc de ne point le voir, et espérant qu'il s'en irait sans me parler, je continuai ma besogne et ma chanson. Mais au lieu de partir, M. le curé resta là tant que ma voix se fit entendre; puis il regarda dans la cour où je me trouvais seul; finalement il s'approcha de la charrette et me dit: "Bonjour, Louis, quel âge as-tu maintenant?" Je dégringolai de ma charrette, je retirai mon bonnet de coton bleu à raies rouges, et m'appuyant sur ma fourche, je lui répondis: "Vraiment, monsieur, ce n'est pas difficile à compter, je suis né le 26 juillet 1827, nous voilà en juin 1841, je vais attraper mes quatorze ans."

II. Grammar:—

(1) Give the English and feminine of:—*empereur, dieu, jumeau, frais, mineur, pêcheur, parrain, ceux-ci, vieillot, feu.*

(2) Give the past participle, the 1st person singular of the future, and of the present subjunctive of:—*dire, cueillir, savoir, devoir, mourir.*

(3) Conjugate affirmatively the imperative of *s'en aller, se reposer,* and *savoir.*

(4) Translate:—The seventy-first soldier; The eightieth page; We are doing it ourselves; I will give you some; Show it to us; Do not send us any; He and she have arrived; What does he say? Do what you like; Who told you so?

III. Translate into French:—

While Louis was in the farmyard unloading some hay from a cart, the clergyman of the parish stopped at the gate to speak to his father who was in the barn at the time. The vicar told him he was not doing his duty in making his son work on the farm instead of sending him to school; for he did not know how to read or write, although he was fourteen years of age. The farmer replied that he had become the richest man in the parish (*commune*) without knowing how to read, and he did not think learning was any good.

THIRD CLASS COLLEGE OF PRECEPTORS, DECEMBER, 1901.

Revision Test Papers.

English Grammar.

Read the following passage carefully before answering Questions 1, 2, 3, 4.

My lord, I would I might entreat your honour
To scan this thing no further; leave it to time:
Though it be fit that Cassio have this place,
For sure he fills it up with great ability,
Yet, if you please to hold him off awhile,
You shall by that perceive him and his means.

(1) Express the meaning of this passage in your own words.

(2) Parse fully—"For sure he fills it up with great ability."

(3) Write out the subject and object of each of these verbs:—entreat, leave, be, perceive.

(4) To what parts of speech do the following words belong; give your reasons:—scan, no, though, awhile, that (twice).

(5) Give the plural of:—chimney, chief, phenomenon, diary, ox; and the feminine of:—executor, fox, abbot, hero, marquis.

(6) Compare:—big, pretty, slender, ill, little, much, gross, well.

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(7) What is a relative pronoun? Give examples of its use in a sentence.

(8) Insert the capitals and the punctuation marks in the following passage:—

why do you not try to save the man said the officer in command but it was all in vain to attempt so hazardous a feat we cannot climb that steep hill was the remark heard on all sides the officer much against his will recognised the justice of this argument he saw too that their own position was rapidly becoming dangerous cease fire was his next command shortly afterwards he fell mortally wounded.

English History, 1066-1603.

(1) How are the following places associated with the relations between England and Scotland? Abernethy, Falaise, Flodden, Halidon Hill, Homildon Hill, Langside, Nevill's Cross, Northallerton, Northampton, Solway Moss. Take them in chronological order, giving dates only when you *know* them.

(2) Explain the causes, and trace the course, of the quarrels between Church and State in the reigns of either (*a*) Henry I., or (*b*) Henry II.

(3) Say what you know about the dress and the dwellings of Englishmen in the time of Wyclif;

Or mention a dozen common things which you use or eat or see nearly every day, the like of which Wyclif never knew.

(4) Would you have worn the Red Rose or the White Rose? Give your reasons, and, if you like, say how you came by them.

(5) Describe the principal objects of *one* of the following English kings, and show how he set about accomplishing them:—(*a*) Edward I.; (*b*) Henry V.; (*c*) Henry VII.

(6) Mention not more than six royal "favourites" during your period, and state how those whom you name caused annoyance to the magnates of the realm.

(7) (*a*) Why and to what extent was Elizabeth a popular monarch?

Or (*b*) Write down the first six important events in Elizabeth's reign which occur to you, and state her connexion with each of them.

Geography.

Question 1 *is obligatory. Not more than five others to be answered.*

(1) On an outline map of England and Wales insert the Pennine Range, the Oolitic Range, and the three Chalk Ranges of England; draw the courses of the Trent and Severn; and mark the positions of Cardiff, Canterbury, Carlisle, Durham, Bangor, Milford, Boston, Plymouth, Birmingham, Leeds.

(2) Explain:—tributary, fenland, volcano, isthmus, roadstead, upland.

(3) From what parts of Europe do we obtain:—wine, timber, wheat, copper?

Why have we to import wheat?

(4) Give a short account of the climate of the British Isles.

(5) Where are the following:—Carpathian Mts., Lakes Onega and Como, Malta, Moscow, Madrid, Caspian Sea, the mouth of the Danube.

(6) By what railway routes could you go from London to Edinburgh? Mention the chief towns on *one* of them. Why do all the largest English railways converge on London?

(7) At what places in England and Wales are these things made, and why:—wool, ships, pens, paper, silk?

Arithmetic.

(1) Find the least number of rows of benches required to seat 1,500 people, each row containing 4 benches, and each bench seating 7 people.

(2) The return first-class fare for a railway journey is £1 1s. 4d.; how much will be spent in a year by a person travelling both ways three times in the week? And how much will be saved by taking a season ticket which costs £45 for the twelve months?

(3) On all incomes above £500 the income tax of 14d. in the £ is paid on the whole income without any deduction; what will be the amount of the tax on an income of £8,250?

(4) Reduce 6437912 inches to miles, furlongs, &c.

(5) (i.) Add together $2\frac{3}{5} + 6\frac{7}{9} + 4\frac{12}{35} + 3\frac{5}{63}$.
(ii.) Subtract $17\frac{13}{32}$ from $217\frac{5}{33}$.

(6) Simplify $(4\frac{3}{4}$ of $7\frac{1}{7}$ of $\frac{14}{15}) \div (6 - 1\frac{7}{6})$.

(7) Explain the value of each of the figures in the number 17·142.

Multiply 17·142 by ·019, and divide ·6177668 by 46·102.

(8) A grocer buys teas at 1s. 2d., 1s. 4d. and 1s. 9d. per lb., and mixes them in equal proportions; what will be the price of 56 lbs. of the mixture?

Find, by Practice, the cost of 424 chests, if each chest contains 56 lbs.

(9) The weekly wages of a number of bricklayers amount to £130 12s. 6d., the rate of pay being $9\frac{1}{2}$d. an hour; to what will they amount if the rate is raised to 10d. an hour?

Answers.

(1) 54. (2) £166 8s.; £121 8s. (3) £481 5s. (4) 101 mi. 4 fur. 34 po. 3 yds. 2 ft. 8 in. (5) (i.) $16\frac{4}{5}$; (ii.) $199\frac{57}{88}$. (6) $7\frac{1}{2}$. (7) ·325698; ·0134. (8) £3 19s. 4d.; £1,681 17s. 4d. (9) £137 10s.

Algebra.

(1) Explain the use of a bracket, taking as an example the algebraical expression $a-(b-c)$.

Remove the brackets and simplify:—
$-3[7a-3\{-4a+2(3a-b)\}-(a+12b)]$.

(2) Find the value of $a^2+b^2-3ab+2cd-d^2$, when $a=-1$, $b=2$, $c=-3$, $d=1$.

(3) Multiply (i.) a^2-ab+b^2 by a^2+ab+b^2; (ii.) $2x^3+7x-5$ by $5x^2-7$.

(4) Divide $9x^4-9x^3y+12xy^3-16y^4$ by $3x^2-4y^2$.

(5) Solve the equations:—

(i.) $8-\frac{6-x}{7}=\frac{5x}{14}+5\frac{1}{2}$;

(ii.) $16(3x-5)-15\{2-(4x-7)\}=53+41(8-x)$;

(iii.) $28-(3x-7)(8+9x)=198-3(3x-4)^2$.

(6) Resolve into factors:—

(i.) a^2-9; (ii.) $x^2-3x-18$; (iii.) $a^2x^2-b^2y^2-b^2x^2+a^2y^2$.

What algebraical expressions will divide into $x^2-7x+19$ and leave a remainder 7?

(7) The three numbers 8, 15, 17 are taken, and the same number is added to each; what will this number be if it is then found that twice the first with three times the second is equal to four times the third?

(8) A man can walk at the rate of x miles an hour, can cycle three times as fast, and travel by train three times as fast as he can by cycle; how long will it take him to travel 100 miles, if he walks 10 miles, cycles 25 miles, and trains the rest of his journey?

And also, how far will he go in 10 hours, if he walks for two hours, cycles for three hours, and goes by train the remainder of the time?

Answers.

(1) 18*b*. (2) 6. (3) (i.) $a^4+a^2b^2+b^4$;
(ii.) $10x^5+21x^3-25x^2-49x+35$.
(4) $3x^2-3xy+4y^2$. (5) (i.) $7\frac{2}{3}$; (ii.) 4; (iii.) -2.
(6) (i.) $(a+3)(a-3)$; (ii.) $(x-6)(x+3)$;
(iii.) $(a+b)(a-b)(x^2+y^2)$; $x-3$ and $x-4$.
(7) 7. (8) $\frac{230}{9x}$ hrs; $56x$ miles.

Euclid.

BOOK I., PROPS. 1-26.

(1) Define a plane and a plane figure.

A plane figure is bounded by three straight lines; what is such a figure called? Draw figures in the cases when the straight lines are (1) all equal, (2) two only equal, (3) all three unequal, and name them.

(2) What is a postulate? Write out the postulates, explaining why they are necessary in Euclid.

(3) From the greater of two given straight lines cut off a part equal to the less.

(4) OA, OB, OC, three equal rods hinged at O, are so placed that the angles AOB, BOC, COA are equal to one another; show that the triangle formed by joining A, B and C is equilateral.

(5) If two angles of a triangle be equal to one another, then the sides also which subtend, or are opposite to, the equal angles, shall be equal to one another.

Thence show that an equiangular triangle is also equilateral.

(6) Two straight lines AB, CD intersect at E; show that (1) the adjacent angles are either two right angles or together

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equal to two right angles, (2) the vertically opposite angles are equal.

(7) If one side of a triangle be greater than another, the angle opposite to the greater side is greater than the angle opposite to the less.

(8) ABC is any triangle. From A a straight line AD is drawn equal to AC and on the side remote from B. If BD and CD be joined, show that BD is greater than CD.

(9) What is "the distance of a point from a straight line"?

Any point on the bisector of an angle is at equal distances from the straight lines containing the angle.

French.

I. Translate into English:—

The Beggar.

Le passant s'arrêta et après avoir considéré quelques moments le pauvre: "Vous me paraissez," lui dit-il, "intelligent et en état de travailler: pourquoi faire un si vil métier? Je veux vous tirer de cette triste situation et vous donner dix mille francs par an." Le mendiant se mit (*began*) à rire. "Riez tant que (*as long as*) vous le voudrez, mais suivez mes conseils et vous aurez ce que je vous promets. J'ai été aussi pauvre que vous; mais au lieu de mendier je me suis fait une hotte (*big basket*) avec un mauvais panier, et je suis allé dans les villages et dans les villes de province demander, non pas des aumônes (*alms*) mais de vieux chiffons qu'on me donnait gratis, et que je revendais ensuite aux fabricants de papier. Au bout d'un an, je ne demandais plus pour rien les chiffons, mais je les achetais, et j'avais aussi une charrette et un âne pour faire mon petit commerce."

II. Grammar:—

(1) Give the plural of:—*sou, œil, clou, détail, madame.*

(2) Form verbs from:—*doux, rouge, grand, vieux, règle.*

(3) Form adverbs from:—*prudent, poli, meilleur, aveugle, faux.*

(4) Write in full the present indicative of:—*manger, rompre, aller, punir, ouvrir.*

(5) Translate:—The eleventh of June, the twenty-first house, ninety-eight girls, she is fifteen years of age, it is half-past twelve.

III. Translate into French:—

(1) Where are the letters my brothers have written to you?

(2) I do not know, I have not seen them.

(3) The whole army was destroyed; eighty officers were killed.

(4) To-day is the eighth of August, 1901.

(5) Have you given it to them?

(6) No one does it better than he.

(7) You are wrong, it was she who had done it.

(8) The boy was protecting the dog from harm.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Educational Value of Stamp Collecting.

Will you permit me cordially to endorse all that Mr. Thomson has said in your August number on "The Educational Value of Stamp Collecting." Few people are aware of the numerous pleasant by-paths of miscellaneous knowledge into which the serious philatelist (as distinguished from the mere stamp-collector) is frequently beguiled by his fascinating hobby; and although I am not a teacher, I can readily imagine that in the hands of a capable teacher a boy's stamp collection may be the means of conveying a vast amount of useful knowledge in a pleasant form. It may be worth while to enumerate at random a few points into which my devotion to the pursuit of philately has led me to make fairly extensive enquiries during the past few months. I have had occasion to investigate the significance of a number of Japanese emblems, whilst two portraits of Japanese semi-divinities led to looking up some details of the more or less mythical histories of these personages. These points involved the deciphering of some inscriptions, a labour which some friendly Japs and an extensive paper on Japanese inscriptions by a late president of the French Philatelic Society brought to a successful issue. Similar ground I covered with regard to some Siamese curiosities.

Quite lately I have had occasion to explore a little known region in the domain of British colonial history as regards the former relations of the Mosquito Coast Indians with this country and their present government. The expected issue of postage stamps for British Somaliland drew my attention to the present condition of this quarter of the globe, and some questions which arose as to some Argentine stamps caused a minute geographical research into the provinces and municipalities of that republic. I may perhaps add that most of these researches were in connection with revenue stamps, a much neglected branch of philately to which I have been devoting some attention. But any kind of stamps will suggest many subjects for investigation to an enquiring mind.

With their characteristic perspicuity our neighbours on the other side of the Channel have summed up the possibilities of philately well. The first article of the statutes of the Société Française de Timbrologie reads: "La société a pour objet l'étude des timbres considérés soit en eux-mêmes, soit dans leurs rapports avec la chronologie, l'histoire et la géographie, avec l'administration et les finances, avec la linguistique et les beaux-arts." To which we may add "avec l'histoire naturelle." And after all, why should not philately be regarded on the same footing as, say, numismatics? The reason is probably that it is not old enough. If the ancient Greeks and Romans had been acquainted with the arts of printing and paper-making, and had developed a prepaid postal system, would not the stamps bearing effigies of emperors, kings and dictators with contemporary inscriptions been just as valuable for throwing light on historical questions as their coins are at the present day? Perhaps posterity will see a Philatelic Department of the British Museum on the same scale as the Coin Department. There is already at that institution an excellent nucleus.

L. W. Fulcher.

(We have been compelled to postpone the publication of several letters owing to want of space.—Eds.)

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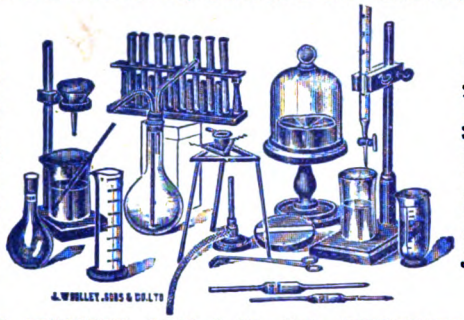

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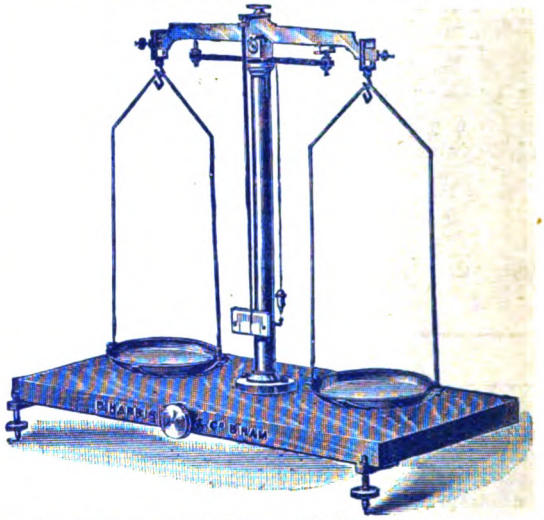

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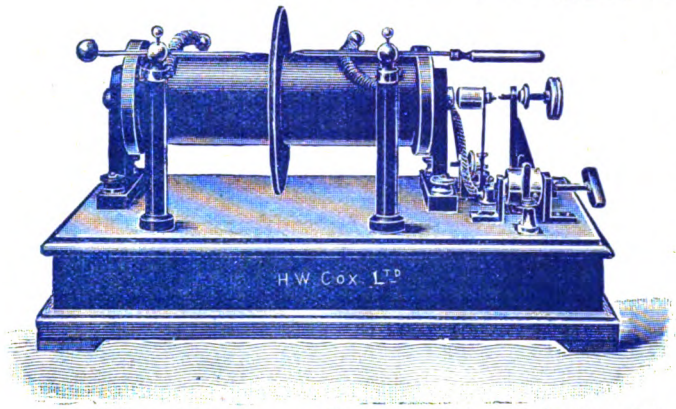

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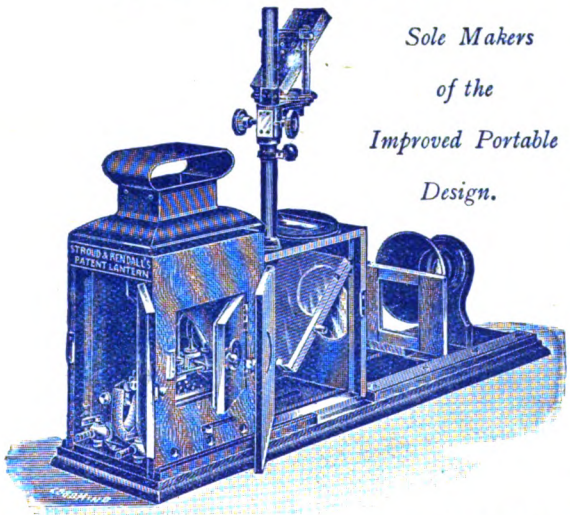

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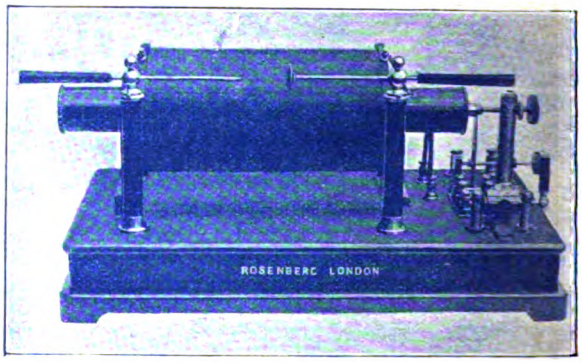

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The School World

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No. 35. NOVEMBER, 1901. SIXPENCE.

SUGGESTIONS TOWARDS SEASONAL NATURAL HISTORY IN SCHOOLS.

By J. ARTHUR THOMSON, M.A.
Regius Professor of Natural History in the University of Aberdeen.

III.—Autumn.

STARTING, as before, from the fundamental physical conditions of the seasons, and from their more obvious results, such as the shorter and colder days we are now having, we may reach along many different paths the same general impression, that autumn is biologically the evening of the year. Our natural history studies should be detailed illustrations of this familiar fact, illuminations of this commonplace. We have to try to get our scholars to recognise the various notes of the year's curfew — notes of decay, of preparation, of futurity, of rest, and how much more.

(1) The interesting story of the withering and fall of the leaves—which are beneficent and beautiful in their dying as in their life—lies outside the particular series of (Natural History) studies which I am trying to illustrate in these papers, but there could be no better beginning for autumn season-lore. To collect some great autumnal bouquets for school decoration, to press fine specimens of vine-leaves and the like (often procurable for a few pence at the fruiterer's), to make a series of water-colour sketches of the progressive colour-changes, will be a pleasure to the pupils; and when they have done enough of that, it will be natural to inquire what the withering means, how it is in a sense a literal "beauty for ashes," how the separation of dead from living is brought about in different cases, and why it is well for the tree that the leaves should fall. Kerner's "Plant Life," vol. i., is one of the most useful books of reference on such subjects.

As previously suggested, some of the leaves should be followed underground into the burrows of the earthworms, and the formation of vegetable mould explained.

(2) The fall of the leaf should be contrasted with the scattering of the seeds, which is equally characteristic of autumn. Collections of representative fruits and seeds should be made, and the mode of dispersal should be inquired into in each case. How do you account for grains of wheat and the like found in the forsaken nest of an insect-eating bird?

The part played by birds in the distribution of the seeds of succulent fruits might be taken up as a special problem—made definite by actual observations in the garden, or by the puzzle of a lonely gooseberry bush in the heart of the wood. An interesting digression might consider what Darwin has told us of the "Fauna of Birds' Feet," and in the country a junior class might profitably find out how many different kinds of fruits—such as burdock and cleavers—are entangled in their clothes on the way to school. In many different ways the abundance of life in the dying season may be illustrated, and the general fact should be made clear that "the tide of life which has now turned in ebb is not like one which sinks sullen and empty from a rocky shore: it is rather like that which bears from some great seaport a fleet of richly-laden ships."

(3) The accumulation of stores of food, so well seen in seeds, should also be illustrated among animals. This is obviously the appropriate time for finding out that squirrels store nuts, field-mice grain, moles worms, and so on through the long list. Houssay's "Industries of Animals" will be found useful.

The life of the hive-bee throughout the year should be revised, and the full combs should be shown with the empty wasps' nest as a sharp contrast. Nor should the opportunity be lost of watching for the last of the humble-bees, for here, as in common wasps, the queens are the sole survivors through the winter. In many parts of the country there are fine ant-hills quite near school, and the state of these in late autumn may be judiciously investigated without destroying much of the patient labour of the myriad workers.

(4) Caterpillars on the search for suitable refuges, chrysalids already dormant in their quiet resting-places, snails with their shells sealed up in the recesses of the loosely-built stone wall, the mason-bees' mud-nests within other snail-shells whose tenants have died, . . . and so on to the frogs buried in the mud of the pond, and true winter-sleepers like hedgehog and dormouse: scores of examples may be found to illustrate vividly that to many animals autumn is literally

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the evening of the year, when they go to sleep and await the good morning of another spring. But we shall return to this in our fourth paper.

With the help of a good book on insects, such as (in order of size) G. H. Carpenter's, A. S. Packard's, or D. Sharp's, from any one of which further references will be obtained, the teacher may make some excellent studies, starting with the common oak-apples now conspicuous on the leafless branches, each with a white grub lying quiescent in the centre until the spring awakening. A collection of some of the many different kinds of galls should be formed with the help of the pupils, and a beginning made with a fascinating study of inter-relations which many years' work will not exhaust. In a case like this, which is not easy, it would be well to find out if there is not some local naturalist who has been working at the subject for years, and who would be delighted to give a helping hand at the start—for it is the start which is, after all, most difficult. Several Natural History Societies offer special facilities to teachers.

(5) As early as possible, attention should be paid to the movements of the birds—of those who know no winter in the year, but migrate southwards in late summer and autumn; of those who now make their first appearance, coming to us from their colder breeding-places in the north; of those, strictly speaking "birds of passage," who do not stay long in Britain, but pay us passing visits twice a year in spring and autumn; and of the small remainder who may be called residents. Let us watch the excited congregations and preliminary flight of those who are leaving our shores or our district, and let us make clear to our scholars the year's life of some typical migratory bird—the autumnal flight, often somewhat leisurely; the winter's recuperation in the sunny south; the rapid and often shorter flight northwards to us again in spring; and then the busy time of courting, nest-building, and young-rearing. Gätke's "Helgoland" will make us enthusiastic on the subject, but we must carefully read the article "Migration" in Newton's "Dictionary of Birds" to learn the need of caution in making general statements on the subject. "The flow and ebb of the feathered tide has been sung by poets and discussed by philosophers, has given rise to proverbs and entered into popular superstitions, and yet we must say of it still that our ignorance is immense." But several fascinating lessons may be cautiously planned, and these may be instructively linked to geography, and to geology as well, since the influence of the Ice Ages cannot be overlooked. A small collection of stuffed birds may often be a necessity, and there can be no doubt that most boys will care for birds more in proportion as they cease to have mere blurred impressions of them.

From the migration of birds one might pass for a little to tell of other pilgrimages—as of reindeer and lemmings, whales and seals, salmon and eel. It is obviously condemnatory of our educational method that school children living by the banks of a river rich in salmon should grow up unaware of the broad facts regarding the migrations of these fishes.

The autumnal restlessness of the migratory birds may also be illustrated by the interesting aërial voyages which a number of our little spiders often take in autumn. They pass from field to field, and even across lochs, on silken parachutes of gossamer which form sails for the breezes. There is still ample room for observations on the subject, and as a great part of the mystery of gossamer-flights was cleared up by a boy of thirteen—Jonathan Edwards—it is with great hopefulness that we look forward to the time when tens of thousands of fresh eyes and unprejudiced brains will—as part of their day's work and pleasure—be tackling the tens of thousands of riddles which remain unread. In the meantime, the problem is in great part that of opening eyes and quickening interest; and as a test case we would press upon the attention of teachers the fact that in many parts of the country in autumn one of the most impressive sights which the scholars see on their way to school is the innumerable multitude of webs and threads made conspicuous on hedgerow and heath by the morning moisture. The day is surely past when we can be content with leaving this simply as a riddle in the child's mind, which school at least will never help to solve! See, *to begin with*, the chapter on Gossamer in Professor Miall's "Round the Year," or the chapter on Spiders in my "Natural History of the Year."

(6) If there is a bee-hive within observation, the massacre of the drones may be seen, and some passages from Maeterlinck's "Life of the Bee" might be profitably read by senior scholars, if only to show that science and poetry are not necessarily incompatible. But the rapid depopulation of the wasps' nests till only a few queens are left in hiding is perhaps an easier instance of the mortality which is so conspicuous in autumn. The disappearance of most flowers and insects, the death of the annuals, the fall of the leaf, the departure of most of the birds, and so on, form the sad side of the picture, which has to be corrected by the big fact that autumn is the preparation period for another spring.

As in my previous papers, I must content myself with six illustrations, but they can be multiplied almost without end. I have been told by a critic that my suggestions are too highly pitched to be useful, but I am happy to be aware of teachers who have carried the seasonal method far further than I have been able to sketch. A juster criticism would have been that my suggestions are not ambitious enough. All I have insisted upon is that we should have the real thing before our scholars' eyes and at appropriate times. It is not indeed much to ask—a handful of leaves of vine, virginian creeper, bramble, and bird-cherry; a plate of autumn fruits, and some tubes with dandelion-down and splitting broom-pods; the nuts from one of the squirrel's many stores; a few dormant chrysalids and some bunches of oak-apples; a shelf of nests whose tenants have crossed the seas; a skein of gossamer to see how long it will last; and an empty wasps' nest! With these, to begin with, we have material for many pleasant studies and

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problems enough for a lifetime of thinking and research; but, without these, or their hundred and one analogues, our natural-history lessons will certainly be seasonally inappropriate, and are likely to mean vanity and vexation of spirit.

SIMPLE EXPERIMENTS IN MECHANICS.

By W. W. F. PULLEN, M.I.M.E.
South-Western Polytechnic, Chelsea.

THERE is scarcely a science which lends itself to experiment of an elementary and logical character much better than does mechanics.

The lecture experiments of some years ago were mostly of a qualitative nature and their value was correspondingly small. Experiments, when conducted by junior students, must be quantitative to have much real educative value; and it is not a difficult matter to arrange a number of these in mechanics without costly and elaborate apparatus.

Advantage should be taken of any opportunity for impressing upon a student the value or otherwise of his own work. For example: the result of an experiment can often be expressed in the form of a curve on squared paper and the equation to this curve can often be obtained. After a student has obtained these, he should substitute a value of one of the fundamental variables in his equation and solve for the other variable. He should then read off the corresponding value from the curve and finally return to his apparatus and determine the same quantity experimentally. If he has worked carefully the three values of the same variable should very nearly coincide with one another.

In what follows, three typical and easy experiments have been described, the numbers given being obtained by some of the writer's elementary students, and with one exception upon apparatus constructed under the writer's supervision.

WIRE STRAINING EXPERIMENT.—This is interesting from more than one point of view. The apparatus required may be cheaply made and duplicated without difficulty. It is shown in Fig. 1. A short block of wood about 2 or 2½ ins. square and a foot long is secured to an iron joist (which supports the ceiling of the laboratory) with a couple of fang bolts. A wooden frame A is suspended by a couple of iron rods B to the overhead block of wood. In the frame A, the block C slides very easily. A steel scale at least 18 ins. long and graduated in tenths of an inch is attached to the frame and a vernier screwed to the sliding block reads to hundredths of an inch. The wire to be stretched is gripped by a crude form of clip attached to the overhead block and passes under a spring clip on the slider, beyond which it extends to a load pillar just below the frame A. The length of the wire between the two clips is between five and six feet in the writer's apparatus.

The wire is rigged up and the load pillar attached by twisting the wire round it. It should be weighed and it is more convenient if made just 1 lb. in weight. Disc weights of 1 lb. each with a slot in them are used for loading purposes. The original length of the wire between the clips is obtained with a steel tape, and the diameter with a micrometer reading to thousandths of an inch.

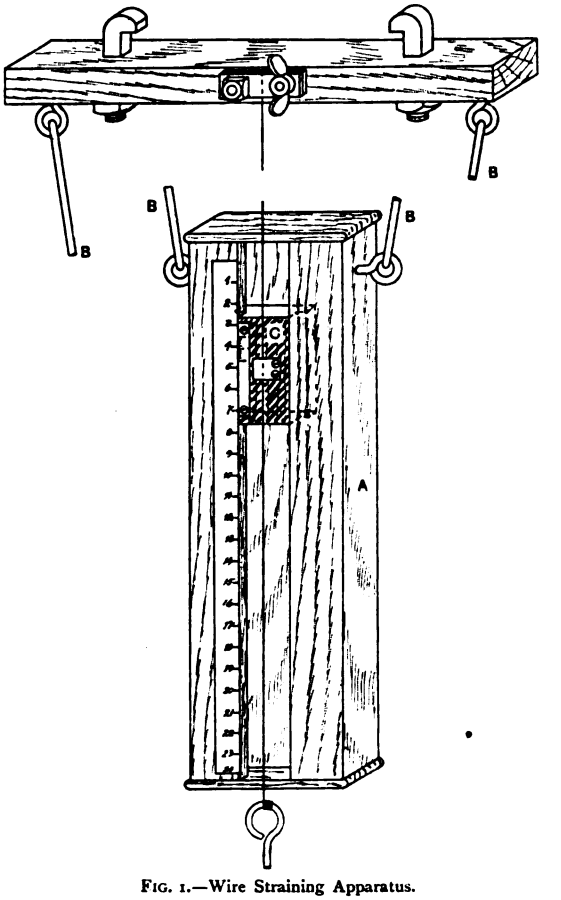

FIG. 1.—Wire Straining Apparatus.

On account of the wood frame A being *suspended*, there can be no chance of any friction between the slider and the frame due to want of alignment, as there might be if the frame were *fixed* to a wall.

Each weight must be put on gently and without shock. It is not necessary to reproduce the table of observations. The numbers in this table have been plotted in Fig. 2. It will be noticed that after 28 lbs. had been put on the load pillar, the loads were removed, and we have the portion GH of the diagram in Fig. 2 indicating the permanent extension EH after all the loads were removed. The loads were then replaced on the load pillar and the plotted points all lie on HG. After G has been again reached, further loads give the curve GK, the latter point indicating a load of 32 lbs. The loads were again removed with the same result as before, namely, the straight line KM and a permanent extension of EM. After again loading, the wire broke with 33 lbs.

The lines EF, GH and KM are found to be as nearly as

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possible parallel; indicating that the elastic properties of the material are unaffected by being permanently deformed. They

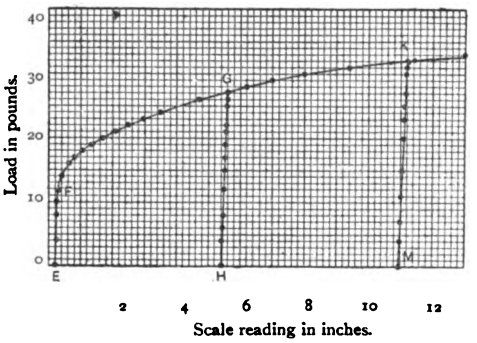

FIG. 2.—Load-Extension Diagram.

also illustrate very clearly how the elastic limit can be permanently raised.

The principal results obtained were: material, copper. Original length between clips = 59 ins. Original diameter = ·029 ins. Stress at original elastic limit F = 12,100 lbs. per sq. in. Corresponding strain = ·013. Breaking stress = 50,000 lbs. per sq. in.

Youug's modulus of elasticity is best found by replotting the elastic portions of the curve (EF, GH and KM) with a horizontal scale 50 or 100 times as large as that in Fig. 2, and drawing the nearest straight lines which assume the average positions of the plotted points. The slope of each line will be approximately the same and will be equal to the load divided by the corresponding extension.

But

$$\text{Young's modulus} = \frac{\text{stress}}{\text{strain}} = \frac{\dfrac{\text{load}}{\text{area}}}{\dfrac{\text{extension}}{\text{original length}}}$$

$$= \frac{\text{load}}{\text{extension}} \times \frac{\text{length}}{\text{area}} = \text{slope} \times \frac{\text{length}}{\text{area.}}$$

Substituting the numbers from the experiment it was found that Young's modulus was 13,930,000 lbs per sq. in.

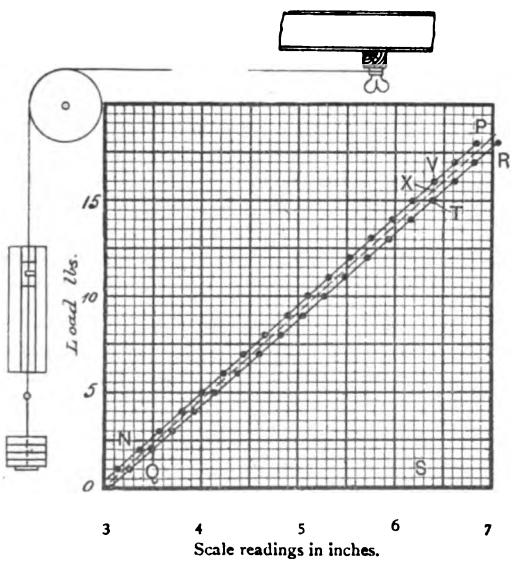

FIG. 3.—Apparatus for the determination of Young's Modulus of Elasticity.

ACCURATE DETERMINATION OF YOUNGS' MODULUS.—Another piece of apparatus which the writer devised for the more accurate determination of Young's modulus is shown on the left and upper sides of Fig. 3. It consists of that shown in Fig. 2, with a very much longer wire, which is passed over a loose pulley and then for a considerable distance in a horizontal direction. The pulley is supported on cone centres to reduce friction, though this is not at all necessary. A similar pulley with a stout cylindrical bearing is now in use at the writer's laboratory and gives thoroughly consistent results. The former apparatus contains a wire about 100 ft. long, and to prevent appreciable sag it rests on two rough pegs driven into the wall at intermediate positions, giving three spans of about 30 ft. each. A load pillar weighing about 6 lbs. is used to keep the wire permanently taut.

The wire is *very carefully* loaded as in the previous experiment, and the readings of the vernier taken each time. It is then *as carefully* unloaded and the vernier read as before, after each weight has been removed.

Plotting the loads vertically and the scale readings horizontally, we get the upper diagonal line NP while loading and the lowest line QR while unloading. Neither of these lines will be the true line which could be obtained if there were no friction of the pulley and supports. As friction always opposes motion, an ordinate such as ST represents the true ordinate minus friction. Similarly the ordinate SV represents the true ordinate plus friction. Hence the true ordinate must be SX. Therefore, draw the dotted line bisecting the vertical intercepts between the lines NP and QR, and this line will be the true elastic line, whose slope multiplied by the length of the wire and divided by its sectional area is Young's modulus. The results obtained were: length = 98 ft.; diameter = ·0159 ins. Material, iron. Slope, 4·056 lbs. per in. Young's modulus, 24,000,000 lbs. per sq. in.

EXPERIMENT TO DETERMINE THE RELATION BETWEEN THE NORMAL PRESSURE BETWEEN TWO SURFACES IN CONTACT AND THE FRICTION PRODUCED BY THE NORMAL PRESSURE.—A very convenient piece of apparatus for this experiment is shown diagrammatically in Fig. 4. A stout board

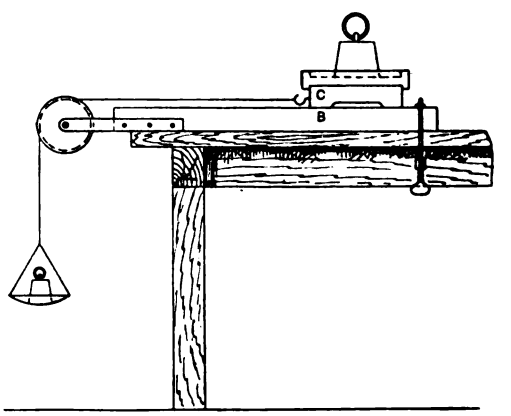

FIG. 4.—Apparatus for determining the co-efficient of friction.

B, preferably from 1½ to 2 inches thick, is secured to the laboratory table by a cramp. This board should be carefully planed on its upper surface,

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and during the experiment kept free from dust. At its left end is fixed a pulley, which should run as freely as possible. It can be cheaply mounted between cone centres. A block of wood C is made to slide upon B by the pull exerted by the fine cord attached to the hook, the other end of the cord supporting the scale pan shown in the figure.

A weight rests upon the block C, but a wooden pad is interposed between it and the weight, to prevent any indenting or scoring of its surface. A set of small brass weights (tenth of a pound) will be found most useful for loading the scale pan, together with the usual larger weights.

There are two distinct results to be sought after, namely (1) the friction while the surfaces are in relative motion, and (2) the friction when they are at rest.

Weigh the block C together *with* the pad under the weight. Also weigh the scale pan and record these weights. Place a weight, say 14 lbs., on the pad on the block C, and then a smaller weight in the scale pan. There will be no motion. Rest one hand firmly on the board B behind the block C and gently push it.[1] If it continues to move *slowly* and *uniformly* the scale pan and weight are just overcoming the resistance of friction, while if the motion is not uniform some of the propelling force is used to accelerate the motion. Adjust the weights in the scale pan until the same rate of motion is attained with each load, as far as can be judged by the experimenter.

In the part of the experiment to determine the friction while the blocks are at rest (sometimes humorously called "stiction") the same method is adopted, except that the block is not started by hand. As the static friction is greater than the sliding friction, the block C and weight will start with a rush; and to prevent this, the thumb and fingers of one hand should be placed astride the cord near the front of the block to prevent it from moving more than an inch or so. The results obtained with static friction are generally not nearly so uniform as those obtained with sliding friction. Those in the following table are more than usually uniform, but they were obtained with surfaces which had been rubbed smooth with frequent use.

TABLE OF OBSERVATIONS.

Kind of Wood:—Board B, teak; block C, beach; weight of scale pan, 1·5 lbs.; weight of block C and pad, ·6 lb.

Load + Block. lbs. = normal pressure	Scale Pan + Weight—lbs.	
	Sliding Friction.	Static Friction.
7·6		3·2
11·6	1·7	
14·6	2·0	5·7
18·6	2·8	
21·6	3·0	7·5
25·6	3·6	
28·6	4·0	10·0
35·6	4·9	12·2
42·6	5·9	14·7
49.6	6·9	16·8
56·6	7·8	20·0

[1] The object of planting the hand firmly on the board B behind the block C is to prevent the hand from imparting any momentum to the slider.

Now plot the resistance to sliding vertically and the load horizontally as in Fig. 5, and we get the points shown by circular dots near the base. These lie virtually on a straight

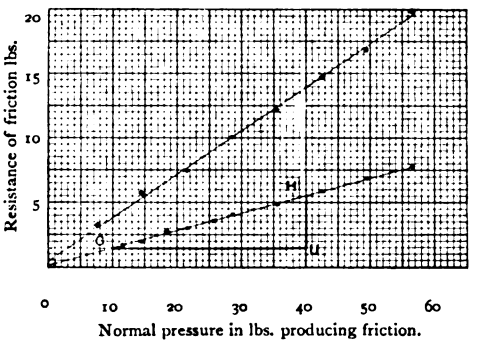

FIG. 5.

line, and hence a straight line is drawn so as to occupy their average position, that is, leave as many dots above as below the line. The same being carried out for static friction, the upper line is obtained. The equation to the line GH is obtained in the usual way as follows. It cuts the vertical axis at a point ·15 and its slope is $\frac{HU}{UG} = \frac{4}{30} = ·133$.

Then

Resistance of friction = ·15 + ·133 × normal pressure.

The small constant term is due to the friction of the pulley, and the fact that the conditions are not quite uniform throughout will have something to do with it. The number 0·133 is called the *coefficient of friction*.

The experiment can be carried out by replacing the scale pan with a light spring balance of the sportsman's type, and then pulling the balance by hand, reading at the same time its indication.

The writer has obtained very good results in this way, the line passing through the origin; but care must be exercised that the *pull is always horizontal*.

The coefficient of static friction was found to be 0·37.

It will be noticed that the block C has a larger surface on its upper face than on the lower face. This permits an experiment to be carried out to determine the influence of the quantity of surface on the friction. It has a little influence but not much.

If the pulley in Fig. 4, is roughly constructed, its own friction will be greater than that indicated above; and hence it is wrong to calculate the coefficient of friction, as is often done, by dividing the scale-pan load by the normal pressure, because the former includes the pulley friction. The slope of the line in Fig. 5 is a more accurate result. The experiment should be conducted with the scale pan in use and again with a spring balance as suggested. The one includes the friction of the pulley and the other does not.

THE most important lesson for a beginner, however he may have studied mathematics and mechanics, and however able he may be as a mathematician, is this—that he must not go on merely assuming that he knows how to do things; he must know things by actual trial and not mere hearsay. He must actually calculate certain numerical results; he must actually illustrate principles with laboratory apparatus.—Prof. John Perry.

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THE HEURISTIC METHOD OF TEACHING CHEMISTRY.

Its Application to More Advanced Problems.

By F. Cranmer Bentley.
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THERE is now a gratifying unanimity among examiners, teachers, and educationists generally, as to the peculiar advantages attaching to the "research" method of teaching the principles of science to children in elementary and secondary schools. The exercises in elementary experimental science described by Professor Armstrong in the report of the British Association Committee in 1891, supplemented by the work of a Committee appointed by the Headmasters' Association, which drew up a course of work suitable for secondary schools extending over two or three years, have brought prominently before the science masters of the country the educational value of self-activity on the part of pupils studying the scientific method. Not only are the courses of work in our schools annually under modification in more rational directions, but modern text-books are similarly being influenced in the same direction.

Notwithstanding these steps in advance, there is still a feeling that, though suitable for introductory work in chemistry and physics, the heuristic method breaks down when it becomes necessary to introduce pupils to the more advanced parts of these subjects. It is the object of this and my succeeding articles to show how, with the exercise of a little ingenuity on the part of the teacher, the same useful plan can be adopted in more difficult problems. The advantage of working with Mr. C. M. Stuart at St. Dunstan's College, Catford, where science teaching has for several years been conducted on heuristic lines, leads me to hope that our experience may prove of assistance to teachers who, though they have found the research plan of study the best for elementary work, are tempted to discard it for the old didactic methods when it becomes necessary to teach the more abstruse parts of experimental science.

Most teachers are already conversant with the heuristic method as applied in the study of the composition of air, the action of acids on metals, the production of hydrogen and the formation of water. Much less, however, has been written concerning more advanced problems, such as the study of chalk, chlorine and hydrochloric acid, sulphur, phosphorus, &c. The experimental work is entirely performed by the pupils themselves working in pairs. The function of the teacher is to suggest, and by continuous cross-examination to lead the students to appreciate, the value of their own observations or to propose fresh experiments. It is advisable that the pupils, before beginning their experiment, should write down the problem they propose to solve. During the operation should be added an account of the method adopted, full experimental data, and finally (which is most important) the conclusions drawn or results obtained.

An Investigation on Chalk.

The substance is examined and found to be a soft, white, tasteless powder. It is shaken with boiled distilled water and filtered. The filtrate is evaporated, and, since there is no residue, we conclude that chalk is quite insoluble in water.

Some chalk is then heated for a short time in a muffle furnace. Meanwhile the action of dilute hydrochloric acid on another sample is observed. The chalk effervesces and dissolves in the acid. The students are then asked for suggestions as to the next step, and, bearing in mind the method of working in the elementary course, someone suggests that we should prepare the gas in large quantities for examination. Each pair of students then sets up an apparatus for this purpose, and describes as fully as possible the properties of this gas, which we call "chalk gas." Since the chalk is dissolved by the acid, it is necessary to examine the dissolved substance. We find it is a white, very deliquescent powder, and very soluble in water. When treated with sulphuric acid it gives off a colourless, fuming gas, with a pungent odour.

Returning now to the examination of the chalk after it has been heated, we find a change has taken place, as the resulting substance is no longer tasteless. We examine this as we did with chalk, and find it is alkaline to litmus, slightly soluble in water, and when treated with dilute acid, dissolves without producing any gas. This dissolved product is examined and found to be identical with that produced when chalk is treated with the same acid. At this point the students are asked to give a name to this new substance, and without much difficulty they recognise it as being lime. Incidentally the "slaking" of lime is investigated, and by a quantitative experiment lime is found to combine with water during the process.

On discovering that the chalk has undergone a change on heating, the suggestion is usually volunteered that there has been an alteration in weight. The chalk has either lost something, or like the metals, when heated, has gained something from the air. The heating of chalk in the furnace is repeated; this time, however, using weighed quantities and heating until the weight is constant. The results of the loss per cent. are collected on the blackboard, and those entirely out of agreement with the others are eliminated, for in every class there will always be one or two who will make some fundamental experimental error. Taking the average of the remaining results, we arrive at the following conclusion:—

Chalk when heated loses in weight, the part given off being just 44 *per cent. of the whole.*

So far it has been plain sailing. Each experiment has followed from that preceding it, and it

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has not been necessary to form any theory as to what has taken place. But now, before proceeding further, we must endeavour to interpret our experimental results. Suggestions are invited, and it is not long before someone suggests that the "chalk gas" is given off on heating chalk as well as on treating it with acid. How shall we test the accuracy of such a theory? We cannot by the means at our command collect the gas given off on heating chalk. What evidence have we to support this idea? Here the teacher usually has to point out the similarity of the substances produced on dissolving chalk and lime in acid, such similarity being accounted for by the above theory, supposing the action to be as follows:—

Chalk + acid = (deliquescent powder) + "chalk gas."
Lime + acid = (deliquescent powder).

Although this evidence is of value, it is not enough. Some other experiment is needed to confirm this view. Provided that the class has covered the elementary course, some boy can usually be found who will propose that we should see if the same *quantity* of gas is given off when chalk is treated with acid as when it is heated. The value of this suggestion is generally fully appreciated by the class, the real difficulty being the method required to solve this problem. However, by a judicious cross-examination, with here and there a leading question, a satisfactory apparatus is devised. In this way every boy understands fully the why and wherefore of the method. The apparatus is well known, so it is not necessary to describe it in full.

The flask, containing a little dilute acid, is weighed together with the small tube, which is outside the flask. Some chalk is then put into the tube, which is lowered into the flask in such a manner that the tube does not come in contact with the acid. The apparatus is then weighed, the tube is upset in the usual manner, and after withdrawing the gas in the flask, the final weight is ascertained. In this method only three weighings are necessary. The results obtained by the class are collected as before, and *the chalk when treated with acid is found to have lost* 44 *per cent.*

Since the loss in weight is the same when chalk is treated with acid as when heated, it is almost certain that the same gas is given off in both cases. Therefore we may conclude that:—

Chalk = lime + "chalk gas."

Could we perform any experiment to confirm this conclusion? Will "chalk gas" combine with lime to form chalk? In answer to this we pass some chalk gas into water containing some dissolved lime. A precipitate is formed. It is collected on a filter paper, and in appearance resembles chalk. To ascertain if it is so, we add a little dilute acid, and, as we expected, a gas is given off which can be identified as "chalk gas."

The next step in the enquiry is to find out the composition of this chalk gas. We write on the blackboard the gases which have been discovered in the previous elementary course: hydrogen, oxygen, nitrogen, oxide of carbon and oxide of sulphur. Is "chalk gas" any one of these? It is not hydrogen because it does not burn, it is not oxygen because it does not support combustion, it is not oxide of sulphur because it has no smell. There remain nitrogen and oxide of carbon. What test must be employed? Surely we must see if either will combine with lime to form chalk. Some nitrogen is passed into lime water, but no precipitate is produced. On the other hand, if we burn some carbon in oxygen and agitate the product with lime water, a precipitate is formed which, as before, can be recognised as chalk. In this way we find that chalk gas is oxide of carbon.

Can we confirm the presence of carbon and oxygen in this gas? To do this we must try to remove the oxygen by heating in the chalk gas something which has a strong tendency to combine with oxygen. Some one suggests phosphorus, we try and it fails. Another suggests magnesium. This metal, when already well alight, continues to burn in the gas-producing magnesium oxide. Among the white powder we see numerous little black specks of carbon, which become more visible on dissolving out the white powder with dilute acid. By this method the composition of the chalk gas is placed beyond dispute. Therefore

Chalk = lime + oxide of carbon.

We must now investigate lime, and referring to our notes we recapitulate its general properties. Besides being an earthy incombustible material, soluble in water and acids, it possesses the property of being alkaline. Do we know any substances possessing a similar characteristic? Referring to our work in the elementary course, we find that the oxides of sodium and potassium possess this property. Is it possible that lime can be a metallic oxide? To put this possibility to the test of experiment we compare the properties of lime with the properties of certain metallic oxides, and since lime is soluble in water we use soluble oxides, viz., of barium, strontium, potassium and sodium. It is necessary to explain that the oxides used have been "slaked," *i.e.*, they have been combined with a certain amount of water. These are given to the students, who contrast them with lime. Like this substance, they possess a strong alkaline reaction and dissolve in acids without effervescence. The dissolved product, when separated by evaporation, gives with sulphuric acid the same fuming gas as lime gave when treated in a similar way. From this datum we are justified in thinking that lime is probably an oxide of a metal, although at this stage we cannot speak with absolute certainty. Assuming this probability to be a fact, we have therefore learnt that

Chalk = oxide of carbon + oxide of a metal.

It is perhaps an advantage that the student should realise that scientific enquiries cannot always be completed as fully or as definitely as a mathe-

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matical investigation, and therefore the somewhat insecure foundation on which these views as to the composition of lime rest is not altogether to be deplored.

During the passage of "chalk gas" into lime-water it is observed that, after the gas has been passing for some time, the chalk is redissolved. By this the students realise that chalk is somewhat soluble in water containing "chalk gas," for on boiling out the excess of gas the chalk is reprecipitated. Ordinary tap-water is then examined and the precipitate formed on boiling is identified as chalk; the reason for its presence being also understood, since by exposing lime water, chalk gas has been found present in the air. The study of natural waters then follows, and the hardness of various samples is measured with soap solution. The hardness is expressed in the number of grams of chalk in a thousand litres, using a standard solution of calcium chloride for comparison.

The above course of work can easily be covered in the course of a term, and we usually conclude with an examination of white lead and malachite. In these cases we somewhat modify the experiments, as it is possible to reduce the metallic oxide formed on heating, by subjecting it to a current of hydrogen, or coal gas, at a high temperature. Then, if time permits, an examination of certain organic materials is made. By burning them, carbon and hydrogen are found to be present, and the existence of nitrogen in albumenoid bodies is ascertained.

PRACTICAL BOTANY FOR CHILDREN.

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I.

THE study of the rudiments of botany, if begun from the standpoint of living plants, is one which is specially adapted for young children, and appeals to their interest in a higher degree than almost any other school subject. From the teacher's point of view elementary botany has the merit of being easily illustrated by specimens and by experiments in which the children can take part, and which do not involve the use of elaborate, mysterious, and expensive apparatus. The pupils can observe and record their own observations, in and out of school, of living plants with excellent results in the development and training of faculties.

Germination.—A good starting-point for a course of lessons adapted for children in the first form of a high school—ages 7 to 10—may be found in the structure of certain common seeds and their way of growing. The bean or pea is a very useful seed on which to begin, as its parts are large, simple, and easily understood.

The beans which are to be examined by the children should be soaked overnight in cold water. Another set, to be investigated later, should be planted in light sand; and a third lot, to be allowed to grow into plants, should be put in ordinary garden-mould in a window box kept in the class-room, and for the due care of them the children may be made responsible.

Each child will require a darning needle, mounted on a penholder with sealing wax, for greater convenience of holding, a sheet of white paper, a box of coloured chalks, and a book of white drawing-paper. A glass slip like those used for mounting microscope specimens is very useful also, as the parts of seeds, &c., can be laid on it for careful examination of detail.

Beans and Mustard Seeds.—The soaked bean, examined first from the outside, has a smooth coat, and on one side is a black mark or *scar*. This is where the bean was fastened into the pod. If it is gently squeezed, a drop of water comes through a tiny hole at one end of the scar.

If now the skin is removed carefully and neatly, by passing the point of the needle under it near the scar and drawing it round the bean so as to make a cut through the skin, an inside layer is seen, which is thin and delicate. At one end of the scar is a little pocket in the inner part of the skin into which fits a little solid white point. Inside the skin is the young plant, which is divided into two parts joined together on one side, and called *seed-leaves*. If these are opened carefully, without breaking them apart, we see a little white body made up of thin delicate leaves and much smaller than the outside solid white point.

In the beans which have begun to grow we find that the skin bursts, then the larger point goes down into the sand and forms the root; the smaller shoot grows upwards, the leaves unfold and grow towards the light. The large seed-leaves, however, do not grow; they stay under the sand and shrink because they feed the young plant until it has green leaves above the sand and can get food for itself by them.

Other seeds which can easily be grown and ought to be examined by the children are peas, mustard and cress, beech seed, maize and wheat.

The mustard seed has a small scar, and on removal of the skin is seen to contain two seed-leaves and a young plant curled up between them as in the bean, but when the mustard seed grows its seed-leaves come above the ground and are eaten in "mustard and cress." The seed-leaves of many plants come above the ground, but are always different in appearance from those of the plant itself—examples, beech; sycamore.

Mustard and cress may be grown on damp flannel or in sand. Children are much interested in the progress of the plants, which are useful as specimens in later lessons. It is seen that mustard and beans are plants which have two seed-leaves and begin to grow in the same way, though they are very different in size and shape.

Maize and Wheat Seed.—Maize and wheat are good examples of seeds which have only one

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seed-leaf and are easy to grow. Young plants of either of them can be grown on muslin stretched over a glass jar filled with water. The muslin is tied over the top of the jar and allowed to curve slightly in the middle so as just to touch the surface of the water. The wheat or maize placed on the muslin begins to grow in a few days; its roots are seen clearly through the glass and it also makes a pretty decoration for the schoolroom.

The maize needs great care in handling and in explanation because the parts are neither as easy to see nor as simple in structure as in the bean.

The grain of maize is really the fruit, not the seed of the plant. This fact must be mentioned and the skin of the fruit noted, closely applied to the seed; if possible an "ear" of maize ought to be shown as well as the separate grains.

If the outer coat is removed we see that on one side of the maize grain there is a white mark; this is the place of the young plant, which is visible when the whole grain is cut in half lengthways. It is made up of two parts, the future stem and leaves and the future root, with one seed-leaf; the rest of the grain supplies food which nourishes the young plant till it can feed itself. Grains which have begun to sprout are smaller and soft because some of the food substance has been already used up. Maize and wheat have only one seed-leaf.

The seeds and seedlings of the bean, mustard and cress, maize and wheat, should be drawn by the children, first as seen from the outside, then the parts separately. In fact, every new specimen studied should be drawn, as in this way only can a teacher be sure that observation is detailed and accurate; drawing ensures mental retention of what has been observed and is a valuable record of work done. It is scarcely necessary to say that the drawings will be very simple and limited to obvious characteristic features. Over elaboration of detail is waste of time at these very early stages.

PARTS OF PLANTS.—After noting the structure and way of growth of the bean seed and grains of maize, a whole plant may be examined. Almost any flowering plant will do. If Virginia stock can be obtained a plant can be given to each child; if only a larger one, such as geranium or fuchsia, is available, two will serve to illustrate the main points to be observed.

The typical plant consists of three well-marked parts, whose uses are easily made clear even to young children by simple questions and illustration. The root holds the plant in the ground, the stem bears leaves and flowers. The less obvious work of root and stem in supplying water can be demonstrated by experiments which at the same time show the need of plants for water, if they are to grow and remain vigorous. A branch without a root, if planted in earth, flags and dies quickly; if put in water it lives much longer but eventually dies; if a plant with a root, stem and leaves planted in good soil is left without water it withers and dies.

THE WATER SERVICE OF PLANTS.—That water travels through the stem to all parts of the flowers and leaves can be shown by putting the stalks of cut white flowers in water coloured pink with cochineal or red ink. The course taken by the coloured water is soon traced by the stems and flowers becoming veined with red. This is very clearly seen in snowdrops, Japanese anemones and other white flowers, and serves a double purpose, of showing that water travels to all parts of the plants and that it travels in certain channels, which are called veins or vessels, and are found everywhere in the plant.

Water is taken by the root from the earth round it, and if a plant is cut off a little above the root, drops of water come from the cut end of the stem remaining, because the root goes on doing its work, although the upper part of the plant has been taken away. This can be shown in class with a geranium, but the children should always be encouraged to observe out of school what goes on in the plant world. The pruning of vines gives a good opportunity of noting the loss of water from cut surfaces. The appearance of a root is clearly seen in the wheat which has been grown on muslin over water. The main root is covered with a velvety pile of hairs; these hairs are obscured in plants grown in earth by grains of mould clinging to them and encrusting the root.

ROOTS IN RELATION TO MOISTURE AND LIGHT.—Roots are divided into two great classes, and it is easy to obtain plenty of each kind. The children's attention should also be directed to roots which are used for food and which are stores of nourishment laid up by the plant for its owns benefit.

The earth-seeking and moisture-seeking tendencies of roots can be shown on the seedlings of beans or peas which have sprouted in sand and the roots of which are straight. If the young beans be carefully taken out of the sand and hung under a damp bell-jar with their roots turned either upward or horizontally, in a few hours the roots will be found to have turned downwards. They always go towards moisture; thus, if seeds are grown in a sieve of damp sand their roots go downwards first, but after passing through the sieve into the air they turn up again, seeking the water in the sand even against their own tendency to grow downwards.

Most roots turn from light; this is seen in the climbing roots of the ivy, and can also be illustrated by growing mustard seeds on muslin over water in a glass; if the whole is placed in the dark the stems grow up and the roots straight down—then light is allowed to fall on the plant from one side only, through a narrow opening. In a few hours the stems are bent towards the light and the young root away from it. These and many other interesting but more elaborate experiments on the movements of plants are described in Professor Geddes' book, "Chapters in Modern Botany."

IT is often said that a person may learn a good deal about plants with only a very ordinary hand-lens. This is true; but he can also learn a good deal without any lens. It is not impossible that, in the haste to give the pupil a microscope, we have forgotten the training of the natural eye; and it is upon this natural eye that the great mass of people must depend.—L. H. Bailey.

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CLASSICS IN IRISH INTERMEDIATE SCHOOLS.

Hints to Teachers of Middle and Senior Grade Classes.

By W. H. D. Rouse, M.A.

Greek.

IT will be most useful if this and the following paper are confined to the last year of work. We have to consider three points: grammar, translation, and composition. And first a few general remarks.

Correctness in accidence and syntax is absolutely necessary; the learning of them is irksome. Our purpose, then, will be best served if we can keep the grammar always going, a little at a time with constant repetition. If an hour a week can be spared for revising it, so much the better; but in any case a proportion of every construing lesson must be given to it. The text-book of accidence will by this time have been gone through once or more, with judicious omissions; the Middle Grade neglecting uncontracted and Homeric forms, rare exceptions, and so forth, at the teacher's discretion. It should now be divided up so that a portion of the declensions and of the conjugations is set for each construing lesson, and the whole book revised each term. Besides, the pupils should be made to parse and decline or conjugate every word, if possible, in the lesson; or if not, the chief of them, including regular nouns and verbs. When the form is in working order this part can be done in fifteen minutes, going hard all the time. Before going in the teacher will do well to note down the chief questions he intends to ask. For the syntax, examples should be learnt by heart and repeated constantly. I have found Sidgwick's "First Greek Writer" good for this purpose; but Abbott and Mansfield's "Syntax" will do. A plan which I have proved useful in all forms, from the lowest to the fifth, is to spend five minutes of each lesson in simple conversation. Take, for example, the first words of the "Hellenica." After the grammar and translation are done, the teacher may say to the top boy, τί ἐγένετο μετὰ ταῦτα; he will reply, Θυμοχάρης ἦλθε μετὰ ταῦτα. The question may then be asked πότε; the reply will be, οὐ πολλαῖς ἡμέραις ὕστερον. A little ingenuity will devise scores of similar questions. At first the boys will need to look on their books for the words of their answer; but before long they become quite ready with books closed. In a week or two more elaborate constructions may be used, phrases of purpose and consequence, conditions, and so forth; the teacher may accustom the boys' ears to εἰπέ μοι, τί φῄς, οὐ δῆτα, and a host of idioms. Everything depends on him, of course, and at first he will need to prepare carefully what he is going to say; but it is surprising how much can be learnt thus, how soon, and with what small pains. Now and then, say every fortnight, a short grammar paper may be given, or the class may write answers to *viva voce* questions, which they can correct on the spot. Collections of grammar questions, such as Heatley's, are useful; and care must be taken that the questions are set systematically. As regards standard, both grades must do the accidence; for syntax, Sidgwick's "First Greek Writer" will do in the Middle Grade, and his "Greek Prose Composition" in the Senior. Selected paragraphs from Thompson's "Greek Syntax" will be useful at this stage; but I know of no Greek grammar which is really satisfactory.

Translation.—The best as well as the most economical plan is this. Suppose Xenophon's "Hellenica" and Euripides' dialogue be the standards, let the class be provided with plain texts of the Oxford "Bibliotheca Classica."[1] The whole may be interleaved, or note-books may be used. A lexicon and Smith's small Dictionaries of Mythology and Antiquities will complete the equipment. For the first two terms these texts may be used for most of the unseens selected by the teacher, who will be wise to read the whole himself in Greek, or at least in English, and to summarise the context for his pupils. They will thus get their unseens not as detached pieces, but as parts of a whole, and will be able to understand them intelligently. In addition, there might be read in the Middle Grade, in the first term, one of Rivington's "Middle Form Classics," in which Thucydides is simplified for young boys; and in part of the second, the Clarendon Press "Story of Marathon," from Herodotus. The rest of the time may be spent in doing the easier parts of the dialogue in one or two plays from the text-book, the master as before reading the whole, and summarising the parts left out, including the choruses. He may at times translate part of these to the class. As we thus combine unseen translation with work on continuous books, allusions and other difficulties may be explained fully, and the pupils may be required to note these in their interleaved copies. Grammatical drill must, of course, be superadded here also.

In the third term, a complete section, or a drama without the more difficult choruses, should be done. By this time the style of the standard authors should be so familiar that progress will be quick. The teacher is recommended to work his books in the same way as before. He should procure the best editions for his own use: Underhill's "Commentary on the Hellenica"[2] (Clarendon Press) is all that Xenophon will require, together with the standard histories, of course; and for Euripides, Paley's complete edition is the most generally useful. He will doubtless find some school edition also purchasable; but these, although often useful to the teacher, are generally bad for the learner, who will be better trained if he works without notes and is given what is necessary by word of mouth afterwards. In this term, the unseens should bear away from the Hellenica and the Euripides. A book such as Jerram's would do, and the experiment might be made of doing these sometimes *viva voce*. The division of time must de-

[1] Euripides has not yet appeared, so the Teubner text had better be used.

[2] Four are published, 1s. 6d. each: "Brasidas in Thrace," "The Siege of Platæa," "The Retreat from Syracuse," "Pylos and Sphacteria."

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pend on the pupils. Here the honours candidates will separate from the rest, and their spare time might be utilised partly upon another work more or less complete: selections from the second volume of Xenophon in the Oxford "Bibliotheca," such as a book of the *Memorabilia*, one (not Euripides) of Sidgwick's "Scenes from Greek Plays" (Rivingtons), or a bit of Plato, say "Crito" or "Meno.'

The Senior Grade will follow the same system, using the Oxford "Thucydides" and the dramatists so far as published[1]; for Homer, the Cambridge texts (by Platt) are useful, because they print the digamma, but passages must also be read in the vulgate, from which papers are always set, or at least pupils must be accustomed to the differences. It will be found that a text of half-a-dozen plays may be bought for the same cost as an edition of one with notes; so that, although the initial expense may appear to be greater, once the texts are bought no more money need be spent. Moreover, there is much useless matter in notes, which the conscientious boy will try to learn, if it is put before him. The plan suggested, however, implies that the teacher knows his business well. For the first term may be suggested Thucydides, book i., and (since Euripides has already been tasted) the "Ajax," "Electra," or "Antigone"; for the second, the Siege of Platæa, part of the Siege of Syracuse, with the Retreat, and selections from the other books, with the "Agamemnon," or the "Eumenides"; the "Clouds," "Knights," or "Frogs" of Aristophanes for the third. Unseens should be largely taken in the first two terms from "Aristophanes" and the easy orators, say Lysias, the teacher filling gaps as before; in the third term from Thucydides, Aeschylus, and Sophocles. Honours candidates must read the books more quickly, using spare time to add one or two more of the alternatives suggested; the unseens must also be more varied, say a book like Spratt & Pretor.

COMPOSITION.—A book of sentences and one of continuous prose should be used side by side. In the Middle Grade, Sidgwick's "First Greek Writer"; in the Senior, his "Greek Prose Composition" will be sufficient for the continuous prose. If possible, half the pieces should be done under examination conditions, that is, in a fixed time, under supervision, and without vocabulary or help of any kind. For the rest, the most effective plan is the following. When the piece has been done and corrected, a fair copy is dictated to the class, who are then given a few minutes to look it through; after which, the copies are collected and destroyed, and the class is called upon to render the English *viva voce* into Greek again. Of course any correct rendering will be accepted; not only the one given out. Honours candidates should do also pieces of unaltered English, taken from Holden or from English authors, at the teacher's choice. Care must be taken to give selections of oratorical and dialogue style, as well as historical, in the highest stage.

[1] Gaps may be filled from Teubner; but the Cambridge "Sophocles" is recommended.

Greek iambics may be learnt in a year by boys who can write decent Greek prose. After finishing Damon, the juniors may try easy passages of English verse: a collection may be found in Lawrence's "Helps, Hints, and Exercises in Greek Verse Composition" (Clarendon Press). Seniors and honours candidates must attempt something more ambitious, such as the pieces in Holden.[1] It is of no use to make the pupils translate the verse pieces aloud, but the method of lectures is to be recommended in working out the copy, if the teacher makes his own.

For good composition it is necessary that quantities of verse and prose should be learnt by heart. Repetition should therefore be part of the regular school work. The book most commonly read may be chosen, and it is useful to have a Greek play (say the "Medea"), a book of Virgil, a speech of Cicero (say "Catiline") and one of Demosthenes ("Olynthiac" or "Philippic") learnt partly in the lower forms and wholly in the highest, with a written examination each term, so that in the end it is known perfectly.

For the plan I have suggested it will be necessary for the master to have a certain number of standard books at hand. Collins's "Classics for English Readers" are interesting, and parts may be read out to the class. For Thucydides and Xenophon, the standard histories must be available; for the drama, Haigh's "Attic Theatre," Moulton's "Ancient Classical Drama," Symonds's "Greek Poets" (2 vols.), Butcher's and Jebb's "Lectures on Greek Literature," will be useful. Lang's "Companion to Homer" is useful, Jebb's little handbook "Homer" is indispensable (he gives names of other useful books). Gow's "Companion to School Classics" should be in every teacher's hands; he will find nearly everything he wants touched upon there, and directions for further study. For bridging over the gaps between his extracts, the teacher will find the old translations useful, such as Chapman's "Iliad" and "Odyssey" (Dent), Hobbes' "Thucydides;"[2] parts of these may be read out in class. For the dramatists, there are Frere's "Aristophanes," Plumptre's "Æschylus," Whitelaw's "Sophocles," Way's "Euripides," all in verse; for Xenophon, Dakyns's translation; and for Homer, Lang's prose versions, all modern. Never lose the chance of picking up an old translation of a classic; these are of little use as "cribs," but invaluable for continuous reading.

[1] A volume of Greek versions, called "Folia Silvulae," is published (Deighton Bell, Cambridge); others in "Cambridge Compositions" (Camb. Univ. Press).

[2] Not recently published, but can be got cheap in old bookshops.

NOTWITHSTANDING the gloomy predictions of cloistered pessimists, there are not wanting indications that the study of Greek will occupy an even more honoured position in the future than in the past. Its freshness is inexhaustible; and its significance is becoming more evident daily. The place of Greece in the general framework of human history appears only the more striking the more we know of the ancient Oriental world, the more deeply we study English and other modern literatures, the more comprehensively we survey the march onward of humanity. No doubt the Greek language will not in the future be forced upon the dull and unwilling to the same extent as in the past. But this is hardly a matter for unmixed regret.—Prof. W. Rhys Roberts.

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MODERN EXPERIMENTS IN EDUCATION.

KESWICK SCHOOL.

AS we have said,[1] the distinguishing characteristic of Keswick School is the importance attached by the governors and the headmaster to the benefits to be derived from co-education. It is one of very few schools, if it is not actually the only English school, in which boys and girls are taught together in mixed classes on the lines of a public-school education. Before recounting the experience which has been gained in this direction at Keswick, it will be well, briefly, for the sake of those of our readers who may be unfamiliar with the school, to give a few particulars as to its foundation.

The school belongs to a very ancient foundation, being stated in a decree, dated early in Elizabeth's reign, to have existed "time whereof the memorie of man knoweth not to the contrarie." For at least three centuries the government of the school was in the hands of eighteen sworn men annually elected and sworn in at Crosthwaite Church. The old "school stock" still forms part of the endowment in the shape of land held in ancient freehold. Early in the nineteenth century secondary education practically ceased to be given, though a flourishing elementary school remained. But the recent large benefactions of the Hewetson family have made it possible to build and endow an entirely new secondary school of the first grade for boys and girls. The foundation stone of the new buildings was laid by Lord Muncaster in 1897, and the school was opened by the Bishop of Hereford on September 19th, 1898.

Before taking up his duties as headmaster of the present school, Mr. Grant paid a two months' visit to the United States to learn as much as possible of American experience in the direction of co-education. Previous to his journey the headmaster was a believer in the joint education of boys and girls; since his return, and in view of his experience at Keswick, he is an enthusiastic advocate of the advantages to be derived from a frank companionship in the class-room and playing-fields of boys and girls of school age. In an article written for the Board of Education Mr. Grant summarises his American investigations: he was astonished, he states, at the practical unanimity with which American teachers, parents, ministers, medical men and others advocated co-education on moral grounds. In Boston, out of thirty-nine physicians whose opinions were obtained, twenty-nine favoured co-education, whilst of the ten opponents the majority were influenced, seemingly, by hygienic rather than moral considerations. Similarly thirty-seven of the clergy of Boston out of forty-six answering, and seventy-four per cent. of the other professions, not including teachers, were persuaded of the advantages of educating boys and girls together.

[1] In the article in our last issue (p. 368) of which this account is a continuation.

The root idea of the opposition to co-educational boarding-schools is what is called the "moral danger." But Mr. Grant's experience at Keswick has greatly strengthened his belief, based on theory and information, that to introduce girls into boarding-schools, far from increasing the moral danger, will tend to cause its disappearance. Richter's sentence puts the case concisely. "To ensure modesty I would advise the education of the sexes together; for two boys will preserve twelve girls, or two girls twelve boys pure amidst coarse jokes and suggestions merely by that instinctive sense which is the source of natural modesty. But I will guarantee nothing in a school where girls are alone together, and still less where boys are." Now it is precisely the weakening of the temptation towards impurity that is the greatest benefit which it is hoped by the advocates of co-education will result from its adoption. It is believed that the family is the great type of pure human relationship, and that there is no reason why the "family" should not be more and more extended in meaning until it embraces all those with whom the boy or girl is brought into contact from the earliest years upwards.

It is time to say something of the actual life of Keswick School, where these principles are carried into practice. From an article by the headmaster in the current number of *The Record* we learn that the keynote of the system has been to give the boarders and day-scholars alike the fullest and most corporate life possible, making no distinction between boys and girls either in school or out. Nothing has been omitted that has contributed to the traditions of public-school life, and not a little of that humanising enjoyment has been added which was previously confined to holidays and the family circle. Day-scholars share equally with boarders in the corporate existence, and there is no tinge of that class feeling which has usually kept them apart. All the school games go on at the same time in the same playing-fields, and there is a constant admixture of boys and girls in games played by both, such as hockey and cricket. Athletics do not monopolise all thought, as in too many public schools, but there is very great keenness shown on both sides. On a recent occasion the girls' and boys' teams were simultaneously playing matches on the school fields against Carlisle Ladies' Team and Carlisle Grammar School respectively, whilst those not playing cheered both teams indiscriminately, and each sex showed equal enthusiasm in the victory of the other.

Mr. Grant believes the advantages of this free intercourse of boy and girl to be numberless, inasmuch as they may be found in every phase and detail of school life, the mixed system being *in all respects* superior to the monastic. But there is one advantage so transcendent that it will be sufficient to urge it as in itself rendering it an imperative duty to give co-education the fairest possible trial under the most favourable conditions. For, after all, talk as we may of commercial supremacy and the race for prosperity, we know perfectly well that the training of moral character cannot be dissociated from any question of practical or tech-

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nical instruction, and that, even from the purely utilitarian point of view, the national strength best worth having is the strength that comes from steadfastness of purpose, singleness of aim and purity of life. No smaller claim is made on behalf of co-education than that it promises to prove the solution not only of "the moral difficulty" in schools, but of that wider problem which is concerned with the whole human race.

The best idea of the intellectual and manual work of the school can be obtained from an examination of the school time-table which is here printed.

It will be seen that an attempt has been made to find a *via media* between the *omnium gatherum* of subjects, which so crowd one another in an American time-table as to render advanced knowledge in any direction quite impossible, and the undue specialisation of the traditional English public-school, where two subjects monopolise four-fifths of the time. Specialisation is encouraged, however, after a certain stage has been reached, and such specialisation is intended to bear reference to the profession or trade afterwards to be followed. But the effort is always to fit the mind for its duties, not to enable the boy or girl to dispense with an apprenticeship. The coming carpenter, for instance, must be taught the necessity for a true eye and a steady hand; he must be trained up to that intelligent interest in men and things which can alone enable a man to adorn truly any position whatsoever.

KESWICK SCHOOL.

An Endowed Grammar School for Boys and Girls.

TIME TABLE (Winter Term).

	Form.	9-9.45 a.m.	9.45-10.45 a.m.	11-11.45 a.m.	11.45-12.30 a.m.	2-3 p.m.	3-4 p.m.	4-5 p.m.
MONDAY.	V. IV. Moderns. Remove. III. II.	Preparation or Orchestra Practice for all forms	Greek or Ger. ,, ,, Eng. Liter. Geography ,, ,,	Cookery or Hygiene or Shorthand Latin ,, French	Cookery or Hygiene or Shorthand French ,, Latin	Games for all Forms	French Mathematics English History ,, ,,	— — — — — —
TUESDAY.	V. IV. Moderns. Remove. III. II.	Mathematics Latin Science English Mathematics French	Latin History French Mathematics Science Arithmetic	Scripture for all Forms.	French Science English Gram French English ,,	Science French Mathematics Latin ,, English	English Mathematics History ,, ,, ,,	— — Ndlwk or Carp Needlework ,, ,,
WEDNESDAY.	V. IV. Moderns. Remove. III. II.	French Latin Mathematics Science English Science	Latin Mathematics French Latin Science English	History Geography History French Mathematics ,,	Geography French Latin English ,, ,,	Games for all Forms	Games for all Forms	— — — — — —
THURSDAY.	V. IV. Moderns. Remove. III. II.	Singing for all Forms	Latin Science Mathematics Geography English Latin	Scripture for all Forms	Mathematics English French Mathematics Latin Science	Mathematics French Drawing Science English Poetry	Drawing ,, Science Latin French Mathematics.	Ndlwk or Carp ,, ,, Needlework Drawing ,, ,,
FRIDAY.	V. IV. Moderns. Remove. III. II.	Latin ,, English French ,, Latin	Greek or Ger ,, ,, or Literature Latin Mathematics Poetry	Science History Mathematics English ,, ,,	English Mathematics French Mathematics Geography ,,	Games for all Forms	Mathematics French Latin Science English ,,	Needlework ,, — — Ndlwk or Carp ,, ,,
SATURDAY.	V. IV. Moderns. Remove. III. II.	Singing for all Forms	Latin English Science English ,, French	French Latin English Mathematics ,, ,,	History English Geography French ,, English	Half-holiday		— — — — — —

NOTES.—Average ages:—V., 15 years; Modern, 16 years; IV., 14 years; R., 12 years; III., 11½ years; II., 10½ years.

In Summer games are played *after* afternoon school. Preparation is between 6 and 8 p.m., from half-an-hour to 2 hours according to age. Prayers 8.45-9 a.m. and at the close of the day's school. School service on Sunday from 3.30-4.30 p.m. and is voluntary. The first form is a Kindergarten, and is preparatory. Above the fifth form the work is specialised.

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THE KING ALFRED COMMEMORATION.

EVEN at normal times, when a spirit of profound placidity broods over the scene, Winchester is one of the most interesting cities in Europe. Any one of its half-dozen historic monuments would suffice to make it memorable. The cathedral, over eight centuries old, is remarkable for its grandeur of design and for its association with a long line of distinguished men. The hospital of St. Cross—founded as a "castle of peace and rest" during the turbulence of Stephen's reign, and extended by Cardinal Beaufort at a time when the country was once again sinking into anarchy—still remains an almost perfect working model of a mediæval institution. The hall of the castle whence Rufus set out on his fatal hunting expedition stands unimpaired by age, and in it is preserved a round table, called King Arthur's, which, whatever its origin, was of sufficient interest nearly four hundred years ago to be specially pointed out to the Emperor Charles V. when he visited England. The College, established by William of Wykeham in 1393, is rich in ancient buildings and venerable traditions. Wolvesey ruins, the relics of a castle built by Henry of Blois, mark the site of the old palace of the Saxon kings in which Alfred lived, and where was written that copy of the Anglo-Saxon Chronicle which is one of the most precious historical manuscripts extant. Hyde Abbey, of which however only a few traces remain, was the last known resting-place of Alfred's bones. Few towns or cities can boast such treasures.

But the recent millenary celebrations added a fresh attraction powerful enough to draw together from the four corners of the earth representatives of every branch of the Anglo-Saxon race to join in reverencing a name and commemorating a career which stand for all that is finest in the English national character, loftiest in kingship, noblest in manhood. Nothing was more conspicuous during the course of the proceedings in Winchester than the enthusiasm with which both Colonials and Americans claimed their share in Alfred, unless it was the warmth of the welcome with which citizens of the mother country admitted the claim. The lamented death of the President of the United States caused a quite general sorrow, but it served also to call forth such sincere and touching expressions of regard for the martyred statesman, and sympathy for the bereaved people, as must have helped to bind faster, in the breasts of all who heard them, the bonds of that informal but very real union between the Republic and the Empire whose existence is one of the surest guarantees of the world's peace and progress.

The statue, the unveiling of which formed the central function of the celebration, is the embodiment of a very fine conception. It is, of course, only an idealised presentment of the king. We have no authentic portraits of any of our kings before Edward III. But the sculptor (Mr. Hamo Thornycroft) has risen to the height of his great opportunity. On the ground, within what in a year or two will be a circle of grass, rests a huge block of unhewn stone. On it is a second block somewhat more artfully shaped. This is surmounted by the colossal bronze statue of the king, majestic in the vigour of mature manhood. He stands fully equipped for war, erect, alert, But his face is calm and kind; his shield rests on the ground; his sword is sheathed. He is armed for defence, not aggression; the watchful father of his people, not the ambitious military adventurer. Above his crown-encircled brow he holds the symbol of the cross. He is preëminently the champion of the faith against the unspent violence of heathendom. The whole is emblematic of the progress of the human race; it suggests the advance from the material to the spiritual, the ascent from Earth to Heaven. From the level of the beast, through growing knowledge, mellowing manners, and gradually perfected skill, Man mounts to the pedestal of culture and civility, and from this again rises to the heights of the communion of the Saints. Higher than that which is symbolised by the Cross there is nothing yet.

No new information concerning Alfred came to light during the gathering. It was not expected. The excavations of the site of Hyde Abbey are still going on, and the Mayor of Winchester is not without hope that the bones of Alfred may be found. Few people share his hope. But if the commemoration had no very tangible academic results, it will not have been in vain that it has called the attention of the English-speaking peoples to the noble ideals of half-forgotten days and to the splendid achievements of the worthiest hero of their race.

THE ENGLISH COURSE FOR THE IRISH INTERMEDIATE EXAMINATIONS, 1902.

By H. MACAULAY FITZGIBBON, M.A.
Examiner to the Irish Intermediate Education Board.

Middle Grade.

THE first thing that strikes the most casual observer is that both in history and literature a special period has been selected, namely, from 1688 to 1800—constituting what is generally known as the Augustan age of English literature. This is an admirable idea. These two subjects—History and literature—should always be studied hand in hand; they are kindred subjects and have an intimate connection with one another. A knowledge of the history of any given period is essential to a right understanding of its literature. Without such knowledge it is impossible for the student of literature to obtain a proper historical perspective. In order to judge rightly of an author and his works, he must know what were the principal characteristics and tendencies of that author's age, what were the conditions under which he wrote his books, what were the influences which helpe

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to shape their form. The student will thus learn why in the active, stirring times of great Elizabeth the drama, so full of action, became the leading form of literature; why in the quieter, more peaceful period that succeded the accession of King William III. the reflective, philosophical essay, dealing with the manners, fashions and customs of the day, took the place of the drama. Therefore let the teacher carry out fully this intention on the part of the framers of the course, and teach these two subjects together, pointing out clearly the bearing of each upon the other.

A remarkable change in this year's course (also for the better, we venture to think) is the prescribing of special books as preparation for the Composition examination, which has hitherto been a weak point with the great majority of candidates. These set books all deal with the prescribed period, viz., from 1667 (the birth of Swift) to 1784 (the death of Johnson). Much greater prominence is now given to this highly important subject. The wording of the programme would seem to mean that all the subjects set will be taken from the matters dealt with in these prescribed books. It is to be hoped that a wide choice of subjects will be given. The exercise will be judged for its general correctness of phraseology, its spelling and grammar, its punctuation and handwriting, as well as for the knowledge of the subject and the general intelligence displayed.

Composition is a difficult subject to teach; it can only be attained by practice; it is therefore desirable to practice students in writing compositions on these set books frequently—say, once a week. These should be written within a limited time, in school hours if possible and under supervision. It will be found a good plan to furnish at first to the pupil an outline or skeleton of treatment of the essay, but later on this should be dispensed with and the pupil practised in thinking for himself. Of course, the set books for composition must first be carefully read through by the pupil and explained by the teacher, who should first thoroughly master them himself. The principles of style and composition should be carefully taught; the pupil should be urged to try and attain to purity, accuracy of construction, precision and energy of language—to express his meaning appropriately and clearly, and also gracefully. In order to do this, he must think clearly and know exactly what he wants to say. In saying it, he must choose the best words and arrange them in the best order in his sentences. The various characteristics of the style of the prescribed authors should be pointed out and analysed; their vocabulary, form of sentences and paragraphs, figures of speech—which may be called the elements of style; as well as the qualities of their style—its simplicity and clearness, strength, pathos and humour, harmony and melody, &c. The various styles should be compared together and contrasted, *e.g.*, the bright, humorous spontaneity of Steele as contrasted with Addison's more studied elegance and nice choice of words. As a help towards attaining the requisite knowledge, the teacher may himself study Minto's "Manual of English Prose Literature" (Blackwood), or if that be thought too elaborate, he will find W. M. Dixon's "Three Centuries of English Prose from 1550 to 1850" (Browne and Nolan) of great use. This is a capital selection of examples of the best English prose arranged in chronological order. Each specimen is complete in itself and the notes briefly explain all unfamiliar names and allusions in the text, and illustrate the characteristics of each writer and the changes in style and development of the language as a literary instrument. A few biographical facts respecting each author are added. Another similar work is Miss Bertha Skeat's "Specimens of English Prose from Malory to Carlyle" (Blackie). The selections in this volume are not so numerous, but at the end of each will be found a few useful hints, indicating the lines on which the passage may best be studied as an example of style. A few biographical and bibliographical particulars are given, and archaic or obscure words and classical and literary allusions explained. The selections are classified according to subject and each is complete in itself. T. Logie Robertson's "English Prose" Part I. (Blackwood), may also be studied with advantage. These books are admirably fitted to inspire students with a desire for fuller acquaintance with the authors and works treated of.

Another book which will be found of great service in preparing the composition exercises, dealing more with the grammatical and etymological side, is David Campbell's "Higher English" (Blackie), which contains a useful section on composition. A "Student's Guide to English Composition" (Ponsonby) has been specially prepared for the Junior Grade, which can likewise be studied with benefit by students in the other grades.

The first of the selected books for composition, Macaulay's "Essay on Johnson," is one of his most finished masterpieces, and is a very favourable specimen of his style. Some confusion has arisen owing to the fact that Macaulay deals with Johnson in two of his essays, and the programme does not specify which is intended. But we have definitely ascertained from the Commissioners that they require the "Biography of Johnson" (originally contributed to the "Encyclopædia Britannica"), and not the "Review of Boswell's Life of Johnson." A suitable edition is that by John Downie, recently published by Blackie. It possesses a good introduction, giving a biography of Macaulay and a full analysis of his style. The volume also contains his "Life of Goldsmith" (written at the same time and for the same publication); and students, or at any rate teachers, should also read this portion of the volume, as a supplement to Thackeray's somewhat meagre lecture on Goldsmith. A useful synopsis of each life and chronological tables are added; also good lists of books for further study on the subject. The notes are, if anything, too full and voluminous; the teacher should make a selection from them and pass over such portions as are unnecessary. The only other suitable edition is that published by Blackwood in his English Classics

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Series, with copious introduction and notes; well edited by D. Nichol Smith.

Thackeray's "Lectures on the English Humorists," being still in copyright, is only to be had in the various editions of Messrs. Smith, Elder and Co. No annotated or school edition exists. The cheap form (1s. in paper, 1s. 6d. in cloth) is as good as the more expensive editions in larger type and better binding. These lectures do not strike us as being suitable for insertion in this course. They are somewhat above the heads of most Middle Grade students, and pre-suppose more knowledge of the subjects than they are likely to possess. Moreover, the portraits given of Addison and Steele are decidedly biased by Thackeray's personal likes and dislikes. He is too much a panegyrist of the former and is too severe on the latter. Mr. L. E. Steele's introduction to his "Selections from the Tatler" (Macmillan) should be read in order to counteract the erroneous impression given by Thackeray. But, nevertheless, these lectures are good examples of Thackeray's style, and doubtless they were selected partly on this account and partly as throwing much light on the period, its manners and customs—its whole atmosphere, as it were. Moreover, they fit in well with the remainder of the course; Swift, Addison, Steele, Johnson and Goldsmith being all intimately connected together. Thackeray's footnotes are not very important, and too much time should not be devoted to them or to the letters quoted. They are introduced merely to exemplify and corroborate what is said in the text. There is much discursive matter and many digressions, especially in the opening passages: these and the peroration to the series at the end of the Goldsmith lecture may be passed over very lightly. The portions relating to Congreve and Sterne should, of course, be skipped. The teacher should supplement the Goldsmith lecture with some other brief biography, such as that in the "English Men of Letters" Series, or in "The Great Writers" Series, or that prefixed to the Globe edition of Goldsmith's works by Masson.

The selection of a portion of Pope's "Iliad," again, is not a very happy choice. No doubt Pope belongs to the chosen period, but why select a translation—a form which never belongs to the highest class of literature? If the idea of the framers of the course was to convey some knowledge of Homer, a good prose translation would have been better for this purpose; if their design was to convey some knowledge of Pope, surely an original poem would have been preferable. Being a poem, it cannot have been selected as an example of style in prose composition. A serviceable edition of Pope's Homer is published in the Chandos Classics (Warne & Co.), containing a few footnotes by Buckley. A more elaborate edition is published in Bohn's Library, with introduction and fuller notes by Watson, Cowper and others, and illustrations by Flaxman.

Turning now to the Literature course, the first thing to be noticed is its large extent—the entire period, from 1688 to 1800, roughly from Dryden to Cowper. The wording of the programme is here a trifle vague. It probably means that a general knowledge of the best-known and principal authors of the period and of their more important works only will be expected. Children cannot make an exhaustive study of such a long period. It cannot be intended that candidates should have an accurate knowledge of *all* the English writers between 1688 and 1800, or even of *all* the works of the principal among such writers. To acquire such a knowledge would take years of study. Obviously it would be absurd to expect Middle Grade students to be intimately acquainted with *all* the productions, say, of Swift, or with *any* of those, say, of Robert Fergusson. Teachers should, consequently, devote their main attention to the best-known authors and their best-known works, and should pass over the minor ones with mere casual reference, unless in such cases as the latter are specially interesting from any particular point of view. And here, no doubt, the individual tastes and inclinations of the teacher will influence him. He must be on his guard against this, and see that he keeps the authors—great and small, important and trivial—in a proper perspective and proportion, and that he does not devote too much attention to any minor writer, no matter how interesting that writer's works may be to the teacher himself individually.

All the chief authors, however, must be studied, and students will be expected to have a fair knowledge of the nature and contents of their principal works.

Amongst those who may be termed the chief authors of the period, in addition to the prescribed authors, are the following:—Poets: Prior, Gay, Gray, Cowper, Thomson, Young, Burns. Novelists: De Foe, Richardson, Fielding, Smollett, Sterne. Dramatists: Congreve, Farquhar, Wycherley, Vanburgh (all at the beginning of the period). Historians and philosophers: Berkeley, Locke, Newton, Burke, Hume, Adam Smith, Gibbon, Boswell. A lesser amount of knowledge will probably be expected also of the following less important writers: Parnell, Mandeville, Ramsey, Blair, Collins, Falconer, Beattie, Blake; Rowe; Arbuthnot, Walpole; Temple, Shaftesbury, Bishop Butler; Pepys, Evelyn. We opine that writers such as Crabbe, Rogers, Miss Baillie, Miss Burney, Mrs. Radcliffe, Miss Edgeworth—who all lived and wrote well into the nineteenth century—or such as Wordsworth, Coleridge, Southey, Landor, Campbell—who all wrote at least one work before 1800—are not included in the period: they really belong to a later age. The third book of the "Golden Treasury" no doubt contains single poems by obscure authors not mentioned above, such as Mickle, Logan, Elliott, &c.; but the student can hardly be expected to know anything further respecting these writers than what he is told in the notes to that book.

(*To be continued.*)

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THE HARROW MARK REDUCER.

IT falls to the lot of most teachers to scale the marks actually obtained in class to some definite maximum. This often means the consumption of much valuable time. The Harrow Mark Reducer, made by Aston and Mander, of 61, Old Compton Street, London, W., provides a means of performing the reduction mechanically. It is, in fact, a slide rule. For those unacquainted with slide rules, it may be convenient to give the following brief explanation. The sum of the logarithms of two numbers gives the logarithm of their product. Or log. A + log. B = log. (A × B). Conversely log. A − log. B = log. (A ÷ B). A slide rule is divided in logarithmic proportions. By adding a length = log. A to length = log. B, we arrive at a length = log. (A + B). The divisions being marked with the numbers to the logs. of which the lengths correspond, we read off the answer at once. In practice, put the number 1 on the slide under, say, 2 on the fixed part; look along the slide for, say, 6; above, on the fixed part will be found 12; *i.e.*, the length of log. 2 + length of log. 6 amounts to a total length = log. 12. To divide we subtract lengths. To apply this principle to Mark Reduction we proceed as follows. Suppose a set of marks is to be reduced from "top boy, 250" to "top boy, 200," we set 250 on the sliding scale opposite to 200 on the fixed one (or *vice versâ*). All other numbers, reduced as required, are read off without further movement of the slide; look for the actual mark on the sliding scale; opposite to it on the fixed scale is the reduced mark. The divisions of the scale being decimal we have to know whether the result of reducing, say, 190, as above will be 154 or 15·4 or 1·54. This difficulty does occur in complicated operations on a slide rule, but not in mark reducing.

The question is—Does the modification of the slide rule called the Harrow Mark Reducer render the reduction of marks easier than it is on the slide rule? Now the two difficulties in using a slide rule are (1) to know, as instanced above, between what powers of 10 the result will lie, and (2) to divide by eye the scale divisions into 10 parts. The first of these the Harrow Mark Reducer attempts to annul by marking the scale on the slide from 2−2000 (why not 1−1000?), *i.e.*, giving three lengths 1−10 instead of the two of the ordinary slide rule. For some reductions this works out well, viz., in those in which the reduced mark is about $\frac{1}{10}$th of the actual, but not in others. In such a reduction as 1450 to 500, though on the slide we have 1450 there is no 500 on the fixed scale, and we must use the 50 or the 5, as we do on an ordinary slide rule. But whereas on a slide rule we can use either, as the divisions are exactly repeated in both ends of the rule, on the Mark Reducer we are limited to the 50 because the part of the rule in which the 5 falls is not subdivided. The Mark Reducer, in fact, attempts unsuccessfully to combat a difficulty which in *mark reducing* does not exist.

The second difficulty, that of dividing by eye the scale divisions into decimal parts, is less pronounced on a fairly open scale. This the Mark Reducer possesses, but unfortunately half of the fixed scale has no intermediate divisions inserted, as, say, between 5 and 6. This leaves a space of about $\frac{7}{8}$th in. to be divided by eye decimally, a space which is far too large. Here again, while giving a larger scale, intermediate divisions are omitted on half of it; the gain on the one hand is balanced by the loss on the other.

The "Gravet" slide rule that we have used for mark reduction for nearly ten years measures 10½ in. × 1⅛ in., and costs 7s. 6d. The Harrow Mark Reducer measures 36 in. × 1⅞ in., and costs 12s. 6d. It is only fair to say that 12 in. might be cut off the slide without in the least reducing its capabilities, thus reducing its length to 24 in. It would be easier to handle and read if its figures were set to read along the rule and not across it. This is impossible, if the numbers of 3 and 4 figures, which are quite valueless, are to be retained. The graduations on the fixed and sliding scales do not match quite accurately.

HAROLD W. ATKINSON.

NATURE-STUDY.[1]

THE increasing importance which is attached by the Board of Education to Nature-study as a branch of school work will have the cordial approval and coöperation of all true educationists. A similar tendency is equally or even more noticeable in America and on the Continent; and the claims of natural science, which had been almost drowned in the clamour for "paying" subjects, seem at last likely to receive a hearing. Every child is at heart a naturalist, and if the inborn taste be encouraged it will in nine cases out of ten prove the foundation of a broadness of view and sympathy which may be sought in vain in subjects of more immediate commercial importance.

To those teachers—and they are many—who desire to avail themselves to the fullest extent of their new opportunities, the question naturally occurs, how is the study of nature as a part of the school curriculum to be best approached? They are in many cases conscious of ignorance of botany, zoology and geology, the knowledge of which at first sight appears to be necessary for successful work.

1 "Rural Readers." By Vincent T. Murché, F.R.G.S. Book I. 168 pp. Book II. 223 pp. (Macmillan.) 1s. each.
"The Village School Reader." Arranged by Charles Savile Roundell. xiii.+188 pp. (Horace Marshall & Sons.) 1s. 6d. net.
Cassell's "Eyes and No Eyes" Series. By Arabella B. Buckley (Mrs. Fisher). Book I.: "Wild Life in Woods and Fields." 48 pp. 4d. Book II.: "By Pond and River." 48 pp. 4d. Book III.: "Plant Life in Field and Garden." 80 pp. 6d. Book IV.: "Birds of the Air." 79 pp. 6d.
"The Crooked Oak Tree." By Miss Field. "The Life of a Dragon Fly." By Miss E. Carter. 64 pp. (Chapman & Hall.) 6d.
Cornell Nature-Study Quarterly, No. 9, May, 1901. (University, Ithaca, N.Y.)
"Field Studies in Natural History." No. 3, "Study of Bog Plants." 16 pp. No. 4, "Study of our native Trees and Shrubs." 8 pp. (County of Essex Technical Instruction Committee.)

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This is a mistaken impression. "Nature-study," says the stimulating *Quarterly* of the Cornell University, "is a *point of view*. It is the acquirement of sympathy with nature . . . . It is not to be taught for the purpose of making the youth a specialist or a scientist . . . . But every pupil may be taught to be interested in plants and birds and insects and running brooks." These words sum up the matter admirably. The Nature-study we desire is neither "diluted and sugar-coated science" nor sentimentalism. It is not the acquisition of facts, but a training in methods of open-eyed, close and accurate observation of facts. To rouse the interest of the pupils is the first essential. Let the teacher show that he understands and *shares* the tastes which lead one boy to carry about a bottle into which he pops every beetle he comes across; which induce another to brave parental wrath by rearing white mice of nomadic habits; which prompt, perhaps, the most "tomboyish" girl in the school to go to infinite pains in collecting and preserving grasses and flowers or birds' eggs. The teacher needs, therefore, to revive the sympathy with "birds and beasts and flowers" and the delight in their lives which he had as a boy. The power of discriminating and accurate observation, the faculty of vivid description and explanation, he presumably possesses. "One of the main objects of the teacher," says the circular of the Board of Education, "should be to develop in every boy and girl that habit of inquiry and research so natural to children. They should be encouraged to ask their own questions about the simple phenomena of Nature which they see around them, and themselves to search for flowers, plants, insects and other objects to illustrate the lessons which they have learnt with the teacher." The circular goes on to indicate how Nature-study may be turned to useful account by teaching the children to recognise useful and injurious plants and animals, and to become familiar with the various processes of nature upon which successful farming depends. It is hoped that the beneficial results of such a scheme intelligently carried out in rural schools will soon be apparent in an improvement in agriculture; and that the genuine love of the country, which the study will foster, will do much to check the great migration of country people to the towns which is so much deplored by social economists.

Such books as those under consideration here will materially assist the teacher in the new work. Mr. Murché's "Rural Readers" and Mrs. Fisher's "Eyes and No Eyes" series may be cordially and unreservedly recommended. A word of special praise is due to the excellent illustrations in both. Mr. A. Fairfax Muckley's coloured pictures of animals and plants in "Eyes and No Eyes" are particularly charming; and Mrs. Fisher fully sustains her high reputation as a writer on natural history. The style of the Rural Readers is different, but the books will be no less interesting to children. "The Village School Reader" consists chiefly of extracts from various writers on natural history. It was a happy thought to lay such men as Gilbert White and Isaac Walton under contribution. A little history and some of the best nature-poetry in the language are also included. With such a feast of good things it seems a little ungracious to carp at the inclusion of the well-known "Flowers of the Field" by Mary Howitt. This poem is, however, an example of the undesirable — because misleading—sentimentalism referred to above.

"Diluted and sugar-coated science" is represented by "The Crooked Oak Tree" and "The Life of a Dragon Fly." They are cleverly written, but are to be regarded more as interesting fairy-tales than as solid helps to natural-history teaching. Even in fairy tales, however, children ought not to be told that a root drinks up water through a little mouth at the end of it (p. 10), that there are seed-boxes at the back of a fern leaf (p. 29), or that rotifers are insects (p. 48).

This issue of *The Cornell Nature-Study Quarterly* completes a most valuable and suggestive series. It contains an interesting Teacher's Leaflet on "Spiders" by J. H. Comstock. The "Field Studies in Natural History," issued by the County of Essex Technical Instruction Committee, give lists of diagnostic characters which will prove useful to students.

NOTES FOR LANTERN LECTURES.

V.—The Principles of Wireless Telegraphy.

By Alfred W. Porter, B.Sc.

Assistant Professor of Physics in, and Fellow of, University College, London.; Member of the Council of the Physical Society of London.

The following notes form the outline of an experimental lantern lecture. The slides required can all be purchased from Messrs. Newton & Co., 3, Fleet Street, London, E.C., for one shilling each, and if required, a lantern and its accessories can be hired from the same firm. Messrs. Newton have put aside the set of slides required, and will lend them on their usual terms. In ordering any of the slides for purchase, it is sufficient to quote the numbers in brackets in the list given below where such bracketed numbers occur; slides without such numbers must be separately specified. The set cannot be divided for hiring purposes. The list of slides need not be given in making an application for loan; it is sufficient to quote the title of these notes and refer to The School World:—

Slides Required.

1. Morse printer; 2. Morse alphabet; 3. Portrait of Sir W. H. Preece, C.B., F.R.S., &c. (L10); 4. Diagram of his apparatus (L11); 5. Portrait of Signor Marconi (L14); 6. Diagram showing flow of energy from battery; 7. Portrait of Dr. Oliver J. Lodge, F.R.S. (L3); 8. Experiments with syntonic Leyden jars (L4); 9. Portrait of Hertz (L1); 10. Standard Hertz Radiator (L2); 11. Spiral wire coherer (L5); 12. Wireless telegraph station at the South Foreland lighthouse (L18); 13. Marconi Transmitter in the lighthouse (L19); 14. Receiving apparatus in the lighthouse (L20); 15. Mast carrying vertical wire (L21); 16. Receiving a message (L22); 17. The mast at

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Wimereux (L23); 18. Receiving a message from Dover at Wimereux (L24); 19. Facsimile and transcription of message sent by Her Majesty the late Queen from Dover to Wimereux (L25).

Hints referring to Experiments.

None of the suggested experiments are difficult; but they will all require some careful experimentation before being fit for a lecture table. The details given are necessarily meagre, and anyone little acquainted with the subject will need to supplement them from elsewhere—*e.g.*, from Dr. Lodge's, "Signalling through space without wires" (The Electrician Printing and Publishing Company). The following is the chief apparatus required:—

An *induction coil* giving a 2 or 3 inch spark (for use with the coherer almost any size is sufficient); secondary cells to excite it.

[If the above is not available, a great deal can be done with a Wimshurst or Voss Influence Machine.]

Two similar *Leyden jars* (quart size or larger); convenient to stand each on a square of tinplate to which one end of the thick wire circle can be soldered; the other end can be rounded off and brought within a quarter of an inch from the knob—the interval forms the spark gap.

A Herts Radiator.—This can be made most simply of two squares of thick metal plate (*e.g.*, brass) about 10 inches square, corners and edges well rounded, placed diagonally so that sparks may pass between adjacent corners when another corner of each is attached by a wire to a secondary terminal of an induction coil. It is better for sparking-knobs to be soldered on the plates; but something may be done without them. In any case where the spark occurs they must be kept well polished. No need to specially insulate the plates. They may lie on two wooden blocks so as to raise them conveniently from the table.

Lecture Notes.

Many known methods of communicating without wires—Romans clapped their hands to summon a slave—we ring bells, blow whistles, wave flags, flash mirrors, &c. But by "wireless telegraphy" we mean an *electrical* method of sending *messages* in which the "telegraph wires" are dispensed with. What is the function of these wires? They guide an electric current from the sending station to the receiving station; here it passes through an electromagnet (Slide 1), *i.e.*, a coil of wire, and when it flows it attracts an iron ball attached to a lever, the other end of which then presses a strip of paper against a printing wheel; the paper is pulled through by clockwork, and the wheel (which is kept inked by a roller above it) marks a line upon the paper. If the current stops, the lever springs back and the ink line comes to an end. Now the operator at the sending station can start or stop the current whenever he pleases by means of a "key," and thus send either short signals ("dots") or long signals ("dashes"), and these are grouped together in a preconcerted way to denote different letters; messages are thereby spelled out (Slide 2).

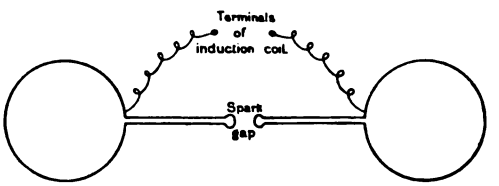
Now unless the electromagnet is placed close to the block of iron the force exerted will not be great enough to move it; hence the current must be led from one station to the other, and that is what the telegraph wire does. (Even then, auxiliary devices, called relays, are always used to magnify the action.) It is true that it is only a question of sensitiveness that makes a wire necessary. If you start or stop a current in a coil, there is a momentary current induced in a neighbouring coil without any wire connection between them. (Illustrate this experimentally.) This principle has been used with partial success by Sir W. H. Preece (Slides 3 and 4), but the problem not satisfactorily solved until Marconi (Slide 5), a former pupil of Righi—half Italian, half English by descent—seized hold of facts known for many years, and so utilised these as to make a practical system.

A current in a wire is surrounded by a field of magnetic force, iron filings arrange themselves so as to map out this field (expt.). It is also surrounded by electric force; electrically charged bodies tend to move from the direct to the return portion of the circuit. Slide 6 represents this by means of lines. These forces exist not only between the wires, but outside as well—to a practically infinite distance theoretically. As soon as the current is started *something* travels out from the battery with immense velocity and puts the space round it in a new state; this velocity has been shown to be 186,000 miles per second—*i.e.*, the same as light. Stop the current, and the old state of things is restored. Start and stop it alternately and very rapidly—*waves* of disturbance travel outwards just as water waves travel out from a finger bobbing up and down in it.

Now we can make this alternating action go on automatically. It often does so when a Leyden jar is discharged through a wire. This is easiest proved by method due to Dr. O. J. Lodge (Slide 7). One sounding tuning-fork sets another going if they are in exact tune with one another. (Show this if possible—both tuning-forks require to be mounted on sounding-boxes.) Properly timed taps to a swing-door will cause it to swing. A glass of water may be moved to and fro either very slowly or very quickly without it spilling; but select the rate at which the water in it naturally oscillates, and it spills at once. In like manner, if the charge in a Leyden jar is oscillating, it can be made to excite similar oscillations in another jar.

Lodge's method is this (Slide 8). One jar has its coatings connected to an electrical machine (Wimshurst or Voss, or an *induction coil*), which charges it; the coatings are also connected to a circle of wire in which there is a spark gap, and sparks are allowed to pass continuously. A similar jar is placed a few feet away, with its unclosed circle of wire parallel to the former, and from the gap in it two parallel wires about a yard long extend; these have a sliding wire placed on them, so that the effective size of this second circle may be altered. For one particular size the oscillations taking place in the first jar will excite oscillations in the second; to discover them, nearly connect the two coatings of the latter together by pasting a strip of tin-foil on the glass, leaving merely a minute gap; sparks will pass freely at this gap when the tuning has been effected. The electric charge spills over, as it were, at the easy place provided. [This interesting experiment is very easy to set up. The circles should be, say, two feet in diameter—the second one rather smaller than the first, so that it may be increased by the slider. All contacts be well made. If it won't act, interchange the jars; they may not be as equal as they look. For further particulars see Lodge's book (p. 6).]

This experiment proves that a discharge may be oscillatory. Imagine now that the coatings of a Leyden jar be separated and flattened, still keeping them connected by a wire with a spark gap in it. They will look something like this:—



The result is a Hertz Radiator (Slides 9 and 10). While sparks are allowed to pass at the gap, oscillations occur as before, but with this difference: a large part of the disturbance travels away and *never returns*: it is radiated, as light is radiated from a candle. It is this radiated energy which is

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employed in wireless telegraphy. To detect it: scrape two knives together in the neighbourhood while sparks are passing; minute sparks will occur between them (the knives correspond to the second jar in the previous expt.); used thus, they constitute a *resonator*.

A vastly more sensitive detector is known, viz. — a *coherer*. The easiest form to set up is the following:—A glass tube a few inches long stopped with a cork at each end and loosely filled with iron filings. Thick copper wires penetrate the corks so as to dip into the filings and form electrodes; connect in simple series with a battery (*e.g.*, a Leclanché cell) a resistance box and a sensitive galvanometer. The filings make such bad contact with one another that such a circuit is non-conducting; the galvanometer is not affected. Start a radiator a few yards away. The filings become suddenly conducting, a current flows and deflects the galvanometer needle. By means of the resistance box the circuit can be so adjusted that the needle does not receive too violent a kick and *comes back to zero* if the filing tube is tapped after the radiator has ceased working. It is now a suitable receiving instrument, though rather a capricious one. In practice a device is used for tapping it back automatically after each excitation, and then everything that is done with the ordinary telegraphic current can be done with the intermittent current that flows through the galvanometer. Thus dot-and-dash signals can be sent and these automatically printed in the usual way. Instead of a galvanometer an electric bell may be used; this will ring when current flows. If it is placed on the same table as the coherer, the vibrations due to the bell striking are usually sufficient to make the coherer non-conducting.

Many different forms—a tube filled with tiny fragments of spiral spring—a single point in contact with a spring (Slide 11) —a few bits of thin steel wire laid in loose contact with one another, and forming a bridge between two electrodes. The action of a coherer may be illustrated by the following experiment due to Lodge:—A layer of brass filings on horizontal glass surface with tin-foil electrodes. Electric discharge (not too strong) from Wimshurst passed between electrodes. The filings move so as to close up gaps; and if after a discharge a pointer be used to sweep them sideways, they will be seen to be matted together into a coherent mass. (This can easily be projected on a screen if the lantern is such that slides are placed horizontally in it.) If the experiment be made in the dark with large brass shavings, sparks are at first seen in all directions in the gaps between the shavings; but they presently close up into conducting chains, and visible discharge ceases.

It would carry us too far afield to discuss all the modifications made enabling signals to be sent to long distances, but the most important is the attachment of a tall conductor (running up a mast) to some part of the sending apparatus with a similar conductor at the receiving station. Each now terminates at the top in an expansion (made of wire netting). It is possible that these act as the terminal plates of a huge Hertz Radiator extending from one station to the other, the *earth* forming the conductor connecting them.

Slides 12 to 18 show actual stations and apparatus. [In 19 note the thick wire leading upwards from the coil; this goes to the mast.] Slide 19 is a facsimile and transcription of a dot-and-dash message.

WHILE, by the present methods of teaching, a knowledge of science in its present state of advancement is imparted very successfully, eminent and far-sighted men have repeatedly been obliged to point out a defect which too often attaches to the present scientific education of our youth. It is the absence of the historical sense and the want of knowledge of the great researches upon which the edifice of science rests.—Prof. Wilhelm Ostwald.

THE TEACHING OF MATHEMATICS.

By PROFESSOR JOHN PERRY, D.Sc., LL.D., F.R.S.

(*Concluded from p.* 390.)

A Course of Elementary Mathematics.

A course of study recommended for training colleges and for boys and girls. Preferably taken as part of the science course; that is, mixed with it.[1]

Arithmetic.—Decimals to be used from the beginning; the fallacy of retaining more figures than are justifiable in calculations involving numbers which represent observed or measured quantities. Contracted and approximate methods of multiplying and dividing numbers whereby all unnecessary figures may be omitted. Using rough checks in arithmetical work, especially with regard to the position of the decimal point.

The use of $5{\cdot}204 \times 10^5$ for 520400 and of $5{\cdot}204 \times 10^{-3}$ for ·005204. The meaning of a common logarithm: the use of logarithms in making calculations involving multiplication, division, involution and evolution. Calculation of numerical values from all sorts of formulæ however complex.

The principle underlying the construction and method of using a common slide rule; the use of a slide rule in making calculations. Conversion of common logarithms into Naperian logarithms. The calculation of square roots by the ordinary arithmetical method. Using algebraic formulæ in working questions on ratio and variation. Simplification of fractions. Calculation of percentages. Expressing shillings and pence as decimals of a pound; quarters and pounds as decimals of a hundred-weight or ton, &c., so that all problems in Practice Interest, Discount, &c., become mere common-sense applications of the simple rules.

Algebra.—To understand any formula so as to be able to use it if numerical values are given for the various quantities. Rules of Indices.

Being told in words how to deal arithmetically with a quantity, to be able to state the matter algebraically. All this has already been stated under the head of Arithmetic. Problems leading to easy equations in one or two unknowns. Easy transformations and simplifications of formulæ and in easy cases finding any one of several quantities in a formula when the others are given. Practice in algebraic manipulation generally.

The determination of the numerical values of constants in equations of known form, when particular values of the variables are given. The meaning of the expression "A varies as B."

Factors of such expressions as $x^2 - a^2$, $x^2 + 11x + 30$, $x^2 - 5x - 66$.

Mensuration.—Testing experimentally the rule for the length of the circumference of a circle, using strings round cylinders, or by rolling a disc or a sphere. Inventing methods of measuring the lengths of curves. Testing the rules for the areas of a triangle, rectangle, parallelogram, circle, ellipse, surface of cylinder, surface of cone, &c., using scales and squared paper. Propositions in Euclid relating to areas tested by squared paper; also by arithmetical work on actual line and angle measurements. The determination of the areas of an irregular plane figure (1) by using the planimeter; (2) by using Simpson's or other well-known rules for the case where a number of equidistant ordinates or widths are given; (3) by the use of squared paper when equidistant ordinates are not given, finding such ordinates; (4) weighing a piece of cardboard and comparing with the

[1] Students of this Syllabus will do well to consult "A Summary of Lectures on Practical Mathematics," published by the Board of Education, 1889.

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weight of a square; (5) counting squares to verify rules. Rules for surfaces of spheres and rings. Rules for volumes of prisms, cylinders, cones, spheres and rings verified by actual experiment; for example, by filling vessels with water or by weighing objects of these shapes made of material of known density, or by allowing such objects to cause water to overflow from a vessel.

The determination of the volume of an irregular solid by each of the three methods for an irregular area, the process being first to obtain an irregular plane figure in which the varying ordinates or widths represent the varying cross sections of the solid. Determination of weights from volumes when densities are given.

Stating a mensuration rule as an algebraic formula. In such a formula any one of the quantities may be the unknown one, the others being known. Numerical exercises in mensuration.

The experimental work in this subject ought to be taken up in connection with practice in weighing and measuring generally; finding specific gravities, illustrations of the principle of Archimedes, the displacements of floating bodies and other elementary scientific work. A good teacher will not overdo this experimental work; he will preserve a proper balance between experimental work, didactic teaching and numerical exercise work.

Use of Squared Paper.—The use of squared paper by merchants and others to show at a glance the rise and fall of prices, of temperature, of the tide, &c. The use of squared paper should be illustrated by the working of many kinds of exercises, but it should be pointed out that there is a general idea underlying them all. The following may be mentioned:—

Plotting of statistics of any kind whatsoever, of general or special interest. What such curves teach. Rates of increase.

Interpolation, or the finding of probable intermediate values. Probable errors of observation. Forming complete price lists by manufacturers. The calculation of a table of logarithms. Finding an average value. Areas and volumes, as explained above. The method of fixing the position of a point in a plane; the x and y and also the r and θ, co-ordinates of a point. Plotting of functions, such as $y=ax^n$, $y=ae^{bx}$, where a, b, n may have all sorts of values. The straight line. Meaning of its *slope*; slope of a curve at any point in it. Rates of increase, illustrated by the speed of a body. Easy exercises on rates of increase of y with regard to x in the case of $y=ax^n$, with illustrations from mechanics and physics.

Determination of maximum and minimum values. The solution of equations. Very clear notions of what we mean by the roots of equations may be obtained by the use of squared paper. Determination of laws which exist between observed quantities, especially of linear laws. Corrections for errors of observation when the plotted quantities are the results of experiment.

In all the work on squared paper a student should be made to understand that an exercise is not completed until the scales and the names of the plotted quantities are clearly indicated on the paper. Also that those scales should be avoided which are obviously inconvenient. Finally, the scales should be chosen so that the plotted figure shall occupy the greater part of the sheet of paper; at any rate, the figure should not be crowded in one corner of the paper.

Geometry.—Dividing lines into parts in given proportions, and other experimental illustrations of the 6th Book of Euclid. Measurement of angles in degrees and radians. The definitions of the sine, cosine, and tangent of an angle; determination of their values by graphical methods; setting out of angles by means of a protractor when they are given in degrees or radians, also when the value of the sine, cosine, or tangent is given. Use of tables of sines, cosines, and tangents. The solution of a right-angled triangle by calculation, and by drawing to scale. The construction of any triangle from given data; determination of the area of a triangle. The more important propositions of Euclid may be illustrated by actual drawing; if the proposition is about angles, these may be measured by means of a protractor; or if it refers to the equality of lines, areas or ratios, lengths may be measured by a scale, and the necessary calculations made arithmetically. This combination of drawing and arithmetical calculation may be freely used to illustrate the truth of a proposition. A good teacher will occasionally introduce demonstrative proof as well as mere measurement.

The method of representing the position of a point in space by its distances from three co-ordinate planes. How the angles are measured between (1) a line and plane; (2) two planes. The angle between two lines has a meaning, whether they do or do not meet. What is meant by the projection of a line or a plane figure on a plane. Plan and elevation of a line which is inclined at given angles to the co-ordinate planes. The meaning of the terms "trace of a line," "trace of a plane."

The difference between a scalar quantity and a vector quantity. Addition and subtraction of vectors. Experimental illustrations.

In setting out the above Syllabus, the items have been arranged under the various branches of the subject.

It will be obvious that it is not intended that these should be studied in the order in which they appear; the teacher will arrange a mixed course such as seems to him best for the class of students with whom he has to deal. A good teacher must understand that no examination made by anyone other than himself can be framed which will properly test the result of his teaching. He must endeavour to give knowledge which becomes part of his pupil's mental machinery, so that the pupil is certain to apply it in all sorts of practical problems, and will no more allow it to become rusty than his power to read or write or walk.

Advanced Course.

The instruction includes greater elaboration of the work specified in the elementary course, that is, much more practice in such computation from more complex formulæ. Demonstrative Geometry based upon Euclid.

The use of approximate formulæ such as

$$(1+a)^n = 1 + na \text{ when } a \text{ is small compared with } 1.$$

Rules in Arithmetic (as of compound interest, &c.) and in Mensuration, stated as algebraic formulæ. Any one of the quantities in a formula may be the unknown one.

Practice in the simplification of algebraical expressions. Solution of equations, and problems leading to equations. Resolution of a fraction into partial fractions.

Trigonometry.—Some knowledge of such limits as $\sin\theta \div \theta$. How to find the values of the sine, cosine, and tangent for angles greater than 90°; complementary and supplementary angles.

Fundamental relations such as $\sin^2\theta + \cos^2\theta = 1$.

Calculating the values of $\sin x$, $\cos x$, and $\log x$ using series.

The fundamental formulæ for the sine and cosine of the sum or difference of two angles, that is

$$\sin(A + B) = \sin A \,.\, \cos B + \cos A \,.\, \sin B$$

and the other similar ones. Formulæ derived from the above, such as those for the sum and difference of two sines or cosines, and those which connect an angle and the double angle.

The sine rule, or $\frac{\sin A}{\sin B} = \frac{a}{b}$ in triangles. Also the rule $c^2 = a^2 + b^2 - 2ab\cos C$.

The expression for the area of a triangle, having given two sides and the included angle, $\frac{1}{2}ab\sin C$.

The truth of such formulæ ought to be illustrated numerically and graphically by taking numerical values of the quantities.

Mensuration. — Guldinus' Theorems relating to areas and volumes of surfaces and solids of revolution. Exercises on the

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area of a segment and sector of a circle, the area of the surface of a sphere between any two parallel planes; approximate rules for length of a circular arc.

Finding centres of gravity using squared paper.

Use of the calculus to find areas and volumes.

Use of Squared Paper.—The plotting of functions, including such as $y=ax^n$; $y=ae^{bx}$; $y=a\sin(cx+d)$; $y=ae^{bx}\sin(cx+a)$.

Having given observed values of two varying quantities which are known to follow one or other of laws like $pv^n=c$, $y=a+bx^2$, $axy=bx+cy$, to find the probable values of the constants.

When two varying quantities are known to follow a given but somewhat complex law, to determine a simple law which between certain limits will give values approximating to the correct ones.

Solving equations by the use of squared paper.

Maximum and minimum problems.

Geometry.—How the position of a point in space is defined by its rectangular co-ordinates x, y, z, or by its polar co-ordinates r, θ, ϕ; the relations between x, y, z and r, θ, ϕ.

Determination of the three angles α, β, γ which a given line makes with the three co-ordinate axes; the relation

$$\cos^2\alpha+\cos^2\beta+\cos^2\gamma=1$$

Determination of the angles between a given line and each of the co-ordinate planes.

When a plane is given by its traces, to determine its inclination to each of the three co-ordinate axes and planes.

The above may be treated analytically or graphically.

Representation by its projections on the three co-ordinate planes of a line whose position and real length are given.

Determination of the angle between two given lines; the angle between two planes whose traces are given. Represent by its projections the line of intersection of two planes whose traces are given.

Vectors.—The scalar product and vector product of two given vectors, with illustrations. Easy Vector Algebra.

Rates and Sums.—Rate of increase of one quantity relatively to that of another; approximate method of calculating a rate of increase, as, for example, in the case where simultaneous values of two varying quantities have been observed experimentally, or by finding the *slope* of the curve obtained by plotting such values.

The term "differential coefficient" as applied to a rate of increase; and the symbol for it, namely $\frac{dy}{dx}$, where y and x represent the two varying quantities.

Rules for finding the differential coefficient of y with respect to x, that is, $\frac{dy}{dx}$, when y and x are related in the following ways:—

$y=ax^n$; $y=ae^{bx}$; $y=\sin x$; $y=\cos x$; $y=a\sin(bx+c)$; $y=A\log(x+a)$.

The study of these functions.

Proof and use of the rules for differentiating a product of two functions or the function of a function. Successive and partial differentiation. Integrating by parts and by substitution and other simple devices.

Calculation of maximum and minimum values.

Integration regarded as the inverse of differentiation, or as a process of summation; the symbols

$\int y.dx$ and $\int_a^b y.dx$; rough methods of finding an approximation to $\int_a^b y.dx$

when numerical values of y and x are known. Integration of y when tabulated for equal increments in x.

The expressions for the following integrals:—

$$\int ax^n\,dx;\ \int ae^{bx}\,dx;\ \int\frac{A}{x+a}dx;$$
$$\int A\sin(ax+b)\,dx;\ \int A\cos(ax+b)dx$$

The solution of simple differential equations.

THE TEACHING OF BOTANY IN SCHOOLS.[1]

By HAROLD WAGER.

IN a report presented to the General Committee of the British Association in 1867 on the best means for promoting scientific education in schools, the statement occurs that, "for scientific training we are decidedly of opinion that the subjects which have paramount claims are experimental physics, elementary chemistry and botany." Of these three subjects botany is the only one which has not yet taken a prominent position in the school curriculum. Its value as a training in scientific method has not yet been fully recognised, and, if taught at all, it is confined mainly to descriptive work on flowers and histology. It is perhaps true to say that the reason for this is not that the claims of botany to be regarded as an instrument of education have been overlooked, but that chemistry and physics are more easily adapted to the conditions of school life and work, and are more largely bound up with the commercial and industrial enterprises of this country than botany.

The educational results which are aimed at in a rational course of chemistry and physics—the development of the spirit of inquiry; the power of accurately observing facts and the critical comparison of, and reasoning from, them; the cultivation of precision of statement and dependence upon one's own judgment; and the fostering of habits of neatness and accuracy—can all be obtained in a properly arranged course of botany, if suitable branches of the science be chosen. And it has this further advantage, that it tends to awaken interest in natural objects and phenomena which are everywhere around one.

I do not for one moment advocate that chemistry and physics should be dropped in order to give place to botany, but rather that it should be included with these in the school curriculum. The educational value of all three subjects is so great that it seems a pity that any one of them should be altogether neglected. The amount of time available for science in boys' schools is about six hours a week, in girls' schools three hours a week. More cannot, I imagine, well be given if the other subjects of the school curriculum are to be dealt with properly. In most boys' schools the whole of this time is given to chemistry and physics; and in order to make the introduction of botany possible I would suggest that part of this time, say three hours a week, be given up to it, leaving three hours a week for experimental science, which might include the elements of chemistry and physics. Or, botany might be taken exclusively in the lower forms, chemistry and physics in the upper. In either case I believe that in the course of four or five years a good foundation could be laid of the fundamental principles of all three subjects, and such a training in scientific method given as would form a good basis for higher work either in the school, the technical college, or the university.

The selection of suitable topics for a school course in botany offers some difficulty. The scope of the science is so vast that it is impossible, even were it desirable, to explore the whole or any considerable part of it. Some selection is, therefore, absolutely necessary, and regard must be had not only to the educational value of the subjects selected, but also to the time at the disposal of the teacher.

A cursory examination of the syllabuses put forth by various examining bodies discloses at once the fact that for purposes of school education they are in most cases far too full, and cover far more of the field of botany than can be accomplished in the time available for it, even if the necessary equipment could be

[1] Paper read at the Glasgow meeting of the British Association on September 16th, to open a discussion on the Teaching of Botany.

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supplied. What is really wanted is that a student should have an intelligent knowledge of scientific method, rather than an imperfect and superficial acquaintance with a large number of facts. Botany offers much scope, in its jargon of technical terms, for mere memory work, or, as Sully calls it, "pretence of knowledge getting," and we must be careful in our selection of topics not to attempt too much and not to lay too much stress upon those in which the technical terms appear to be more important than the subject matter.

The descriptive work on plants which forms so large a part of the present school courses in botany affords, if reasonably taught, excellent practice in observation and critical comparison, and develops skill in the use of a pocket lens and dissecting needles. It is apt, unfortunately, to degenerate into the mechanical filling up of schedules, a piece of drudgery, somewhat akin to that intellectual exercise known in chemistry as test-tubing, which is just as distasteful to the average student and perhaps as unprofitable. It appears to me that three of the most valuable topics from the school point of view are:—

(1) The structure of the flower, the functions of its various parts, and methods of pollination.

(2) Experimental plant physiology.

(3) The structure and germination of the seed and the growth of the embryo.

All three give opportunity for a certain amount of experimental work, and there is plenty of scope for observation and comparison, the drawing of conclusions and the weighing of evidence for and against them. Experimental plant physiology is especially valuable. The function of the leaf, root and stem in nutrition, respiration and transpiration, furnish a series of experimental exercises which are well within the grasp of the older pupils, under the guidance of a competent teacher. A syllabus on these lines has been published in THE SCHOOL WORLD for February, 1901. It is not difficult in such a course to get the student to discover for himself, among other things, that water passes from the root to the stem and leaf through definite channels; that these channels are the woody parts of the plant and correspond to the woody tissues of trees; that there are openings in the leaf through which water and gases might pass; that where the openings are most numerous the water appears more freely; that in a green leaf the green portion is more prominent on that side which is most exposed to light; that green does not appear in the absence of light; that starch is formed in the green parts when light and carbon dioxide are present; that starch disappears from the leaf in the dark, and may be found stored up in stem, root, or tuber, &c.; that there is something in the leaf which transforms starch into sugar, and that it is probably transported to all parts of the plant in this form and used as food. From these facts and many others, all of which can be obtained by the student himself, it will be found possible to come to definite conclusions as to the functions of the various organs.

In a course of lessons on the structure and function of the flower, different types of flowers may be examined and the various organs compared with one another. The structure of the ovary and anther, so far as can be made out with a pocket lens, may be attempted, and a series of experiments made to show that pollen is necessary for the setting of the seed. Contrivances for holding the pollen on the stigma may be investigated: the passage of pollen tubes into the ovary may be seen: pollen tubes may be grown in sugar solution, and various contrivances for insect pollination may be observed. And in all these cases the student may be always placed in the attitude of an investigator, and very little need be taken for granted.

With a little care the development of the seed within the ovary can be followed, and this leads on to the examination of the structure of seeds and germination. This course is easier to manage than the plant physiology course, and is well adapted to those schools in which the necessary equipment for experimental plant physiology is not available.

Other useful topics which may, I think, be included in a school course are: climbing plants, structure of fruits, the dispersal of fruits and seeds, and the characteristics of the common natural orders of flowering plants.

In schools which are well placed in the country, the study of plant associations might possibly be taken up, although this seems to me to be somewhat too special, and demands more precise knowledge of plants than can be reasonably expected of schoolboys.

In the highest forms of secondary schools histological work may perhaps form a part of the science course if taken in connection with the physiology of the various organs; but I should not recommend it. So much of the structure of plants as can be made out with a pocket lens is a valuable addition to the work, but it seems to me undesirable to attempt to make a systematic use of the compound microscope. The histological work, cytology, and morphology of the tissues is, in my opinion, best left to be dealt with in the university course.

The equipment for teaching botany in schools is, as a rule, unsatisfactory. The instruction is generally given in an ordinary class-room, and little attempt is made to give special facilities for the practical work. What is wanted is a room in which botanical experiments can be conveniently set up, and if necessary, left for a considerable time. In large schools which already possess chemical and physical laboratories, the physical laboratory may be made use of without inconvenience to the physical work. In smaller schools a single laboratory which could be used either for physics, chemistry, or botany would suffice. The equipment of such a room for twelve to twenty-four pupils need not be an expensive matter. Stout deal tables, with tops of teak or other hard wood, if possible, allowing about three or four feet by two feet of working space for each pupil, should be provided. Gas should be laid on to each table, and one or two sinks for water should be placed in the room. Some provision will be required to enable the teacher to grow plants and germinate seedlings conveniently. This might be done in pots or boxes open to the room, but it would, I think, be better to have some kind of wardian case, either free in the room or built on to the window. Of course, if a greenhouse is available this would not be required. Cupboards and drawers for apparatus, glass-tubing, &c., would complete the equipment.

If such a room cannot be provided, the selection of topics will be restricted to those which can be dealt with in an ordinary class-room; but with some addition to the equipment, such as a demonstration table, and a shelf under a good window for growing plants, most of the work outlined in this paper could be attempted. In this case, however, much will depend upon the enthusiasm and resources of the teacher. Simplicity should always be aimed at.

The apparatus required is very simple, and may easily be set up, provided such things as pickle jars, jam jars, test tubes, glass and rubber tubing, corks of all sizes, retort stands, &c., are available. Each student should be provided with a pocket lens, which can be mounted on a simple stand to form a dissecting microscope, dissecting needles, razor or sharp knife, watch glasses or small dishes, one or two glass slips, and a camel-hair brush. Simple balances such as are provided for elementary physics will be wanted; and one or two good compound microscopes might be provided for occasional use.

If we are to obtain good results from botany as a school subject, the methods of teaching must be rational. This is of prime importance. The failure to teach botany or any other science by scientific methods can only bring science teaching into disrepute. Mere bookwork is out of place. A boy who

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can repeat by rote the characteristics of various natural orders of plants has not necessarily made any progress in the science of botany. It is essentially a training in method that is wanted, not merely information.

The observations and experiments made should not be simply illustrative of the text-book or lecture, however good these may be. The student should be led by his own observations and experiments to come to conclusions for himself. As Herbert Spencer says: "In education the process of self-development should be encouraged to the uttermost. Children should be led to make their own investigations and draw their own inferences. They should be told as little as possible, and induced to discover as much as possible." This has been emphasised very strongly by Prof. Armstrong in his crusade against the irrational teaching of chemistry and physics, and on the botanical side similar views have been expressed by Prof. Miall, Mr. Seward, Prof. Ganong, and many others who have paid attention to the subject, and it has recently been emphasised by Sir John Gorst in his presidential address to the Education Section.

The practical work done by the pupils in the class-room or laboratory should precede any discussion or lecture upon it in the lecture-room. It will not suffice that they repeat experiments which have been previously shown and carefully explained to them, or to merely verify upon their own specimens the observations made by the teacher, or put before them with full explanations in their text-books. It will probably be best not to lecture at all to elementary students, but simply to discuss with them, as occasion requires, the observations and experiments they have made.

Whilst it is very necessary that the work actually done by the pupils themselves should form the basis of the science, it is perhaps not essential that they should perform all the experiments. Anything of particular difficulty, or involving the use of expensive materials or apparatus, may be done by the teacher; but care should be taken not to tell the pupils anything about it which they can see for themselves, nor to forestall them in drawing inferences from it. Only those experiments that are necessary to supplement the investigations of the boys themselves should be shown, and the teacher ought to resist the temptation to perform any experiment, however pretty, that does not form an essential link in the chain of experimental evidence.

In some cases it may be necessary, in order to arrive at a definite conclusion on some important question, to associate the facts discovered by the pupil with facts which he cannot discover for himself. This should not be done often in an elementary course, and only when the facts are of exceptional importance. For example, in dealing with the structure and function of the various parts of the flower, it is very important, and gives a clue to much that is valuable, to prove that pollen is necessary for the setting of the seed. It is probable that only in exceptionally well-equipped schools will it be possible for the pupils to observe all the facts necessary to prove this, but, by a judicious combination of their own observations with those made and recorded by competent observers, they will have sufficient evidence before them to enable them to come to a definite conclusion.

Some knowledge of the historical development of botany is extremely valuable. It enables the teacher to understand more fully the difficulties of his pupils, and gives him suggestions as to the methods which may be pursued in the investigation of the various problems which arise.

The record of the observations made should be written out in the laboratory as the work proceeds. Many teachers are satisfied with rough notes, provided they are carefully written out afterwards. They say that a boy is thus able to keep his notebook neat and clean, and will take a pride in it. That is quite true, but is it not better for him to take a pride in the real work of which the notebook is a record, and come to realise that notes written out neatly at the time the observations are made are more creditable to him and more valuable as evidence than the rough notes copied out at home? The notes should be as brief as possible, and should be seen by the teacher in the laboratory in the boy's presence. There ought to be no necessity to correct botanical notes out of school hours. Not only is it of little use to the learner, but it is wearisome to the teacher and takes him away from more profitable work.

Careful outline drawing of the various parts of the object under investigation is very important, and should always be insisted upon. The use of some simple colour-scheme is valuable, but over-elaboration is undesirable; and colour should not be used unless it is helpful. The copying of diagrams from text-books should be strongly deprecated. As a drawing lesson it is poor, but as science it is useless and even harmful.

Blackboard sketches are to be preferred to carefully prepared diagrams or models in elucidating points of structure. Models or diagrams of plants or parts of plants should never replace the actual objects, and should not be made use of as a general practice. And, in any case, models of structure which are so easily obtained and examined as pea pods, poppy capsules and the like, are absurd.

In connection with many of the subjects taken in a school course of botany, out-of-door excursions may be organised. These should always have a definite motive, and should never degenerate into the mere naming of plants and drawing up of lists. The collection of specimens may form part of such excursions. Miscellaneous collecting without some definite object is unprofitable, but children are born collectors, and the collection of plants satisfies to some extent this instinct, and may be of great educational value in arousing interest and enthusiasm in the work. For example, in studying the shapes of leaves and their meanings, or the methods of dispersal of fruits and seeds, exceedingly useful and instructive collections may be made, and the drying and mounting of the specimens is a form of manual work in which both neatness and skill in manipulation are involved.

The objection is often made that if these methods are followed the amount of work done in a given time will be very small. This is probably to some extent true, but it must be remembered that, although the progress made at first may be slow, it will ultimately become much more rapid as the pupil gains a firm grasp of fundamental principles. One of the mistakes made in science teaching is to give the pupil so much information at the beginning that he never becomes so thoroughly imbued with the simple fundamental principles as to be able to use them with real advantage at the later stages. Every step he takes should give him a firm foothold from which to attack the difficulties yet to come.

LABORATORY NOTES.

Simple Type of Wireless Telegraphic Apparatus.—(W. F. Collins, *Scientific American*, September 14th, 1901.) The Transmitter is constructed from an ordinary Ruhmkorff coil (½-in. spark). A solid brass ball (½-in. diameter) is supported from each secondary terminal of the coil by means of brass wires; these constitute the "oscillator," which should be adjusted so that an air-gap of ⅛ in. separates the brass balls. The coil is connected in series with a battery (2 Bunsen cells) and a Morse key. One secondary terminal of the cell is connected to earth, and the other is connected to a long aerial line (suspended from a mast or attached to the outside of a building) to the upper end of which is soldered a copper-plate (12 in. square). The Receiver consists of a "coherer," joined

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in series with a "relay" and with two dry cells. The second circuit through the relay contains a "tapper," a "sounder," and a battery of three cells, all in series. The coherer consists of two pieces of brass wire ($\frac{1}{16}$ in. diameter) forced into a piece of glass tubing, with some silver and nickel plugs between the ends of the wires and occupying about $\frac{1}{16}$ in. along the tube. The tapper may be improvised from an old electric bell (wound to 4 ohms). The relay should be wound to about 100 ohms, and the sounder may be of the Morse type wound to 4 ohms. One terminal of the coherer is connected to earth and the other to a long aërial line similar in dimensions to that attached to the transmitter. With such apparatus communication may be maintained between two positions $\frac{1}{4}$ mile apart. Useful hints are given in the paper on the method of conducting the initial adjustment of the apparatus.

Determination of the Index of Refraction of Liquids.—(J. Stewart Gibson, *School Science*, May, 1901.) The essentials of this device are: (1) A tumbler completely filled with water or other liquid the index of refraction of which is to be determined. (2) The arrangement here described. This is figured one-quarter size in the accompanying drawing (Fig. 1). It consists of a horizontal bar of paraffined pine 5 ins. long, 1 in. wide and $\frac{1}{2}$ in. thick, at one end of which and perpendicular to it is fastened another bar, $\frac{1}{2}$ in. by $\frac{1}{2}$ in. and 4 ins. long. On this upright bar or post is arranged a movable sight-

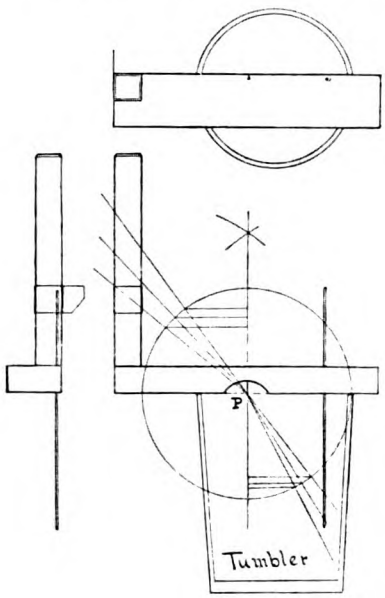

FIG. 1.

edge made of a strip of sheet brass bent around the post so that its edge projects backward about $\frac{1}{2}$ in. perpendicular to the post and in the plane of its end face. The horizontal bar is notched on its under surface at the middle where a pin is driven through and cut off so that its point is just in line with the lower back edge of the bar. About an inch from the opposite end of the bar and close to the back edge a small hole is made through which a half knitting-needle is thrust at right angles to the bar. The bar is placed on the tumbler as shown, care being taken to have the pin-point as close as possible to, but not touching the surface of the liquid. The sight-edge is then adjusted so that it appears to be in line with the pin-point and the point of the knitting needle below the water. The measurement may be transferred directly to the note-book by marking off on two lines, drawn at right angles, the position of the sight-edge on one and that of the pin-point on the other, also marking the position of the needle-point With any convenient radius and the pin-point as centre describe a circle: construct a perpendicular through the pin-point; draw the path of the incident ray from the needle-point to the pin-point, and that of the refracted ray from the pin-point to the sight-edge; construct, measure, and compute the ratio of the sines. By varying the length of the needle beneath the water two or more pairs of angles may be measured in the same figure and the constant ratio of the sines clearly shown.

A New Form of Barometer.—(E. C. Roberts, *Scientific American*, August 10th, 1901.) In making a barometer attention should be paid to the following points:—(1) The necessary amount of mercury should be as small as possible. (2) Both mercury surfaces should be large, the upper being not less than 1 cm. in diameter, and the lower about 4 or 5 cms. (3) The construction should permit of easy filling, to facilitate transportation. These conditions are all met in a form of instrument shown in (Fig. 2). The tube *A*, 1 by 20 cms., is sealed at both ends to a thermometer tube whose internal diameter is about 1 mm. This tube is then bent as shown, and to the end of the length, *D*, is sealed the bulb, *B*, whose diameter is about 5 cms. In bending the tube care must be taken that the dimensions given are carefully adhered to. The whole tube must be cleaned with nitric acid, and is then washed in succession with distilled water, alcohol, ether, and dry air. It is then attached to a suitable frame, and is ready to be filled with mercury.

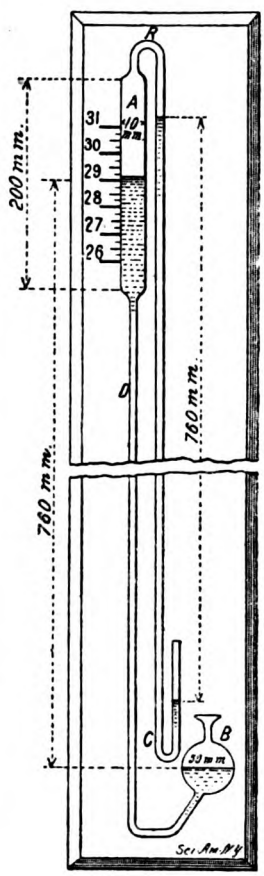

FIG. 2.

The particular form of the tube makes filling a very simple matter. Sufficient mercury is poured into the bulb, *B*, to a little more than half fill it. The whole thing is then laid on edge with the bulb, *B*, up. The mercury will then flow around through the whole tube, driving the air out before it through the tube, *C*. When the whole is filled, the barometer is quickly turned up on end again. Now the distance from *R* to the surface of the mercury at either *B* or *C* is more than 30 ins., and consequently the column breaks at *R* and settles down till on each side it is 30 ins. high. Here we have practically two barometers in parallel, the one, *C*, acting in this case merely as an air-tight seal to the top of the tube of the other. The advantages of the construction are these:

(1) The effective diameter of the tube is the same as that of the part, *A*, while the amount of mercury contained in the apparatus is reduced by about one-half.

(2) The impossibility of filling a tube like this were it sealed off at *R* is obviated by the addition of the part, *C*, which permits of the easy expulsion of the air, and then forms a seal to prevent its re-entrance.

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Demonstration that Plants give off Oxygen.—(Dr. Ida Keller, *Proceedings of the Academy of Natural Sciences of Philadelphia*, 1901.) A receiver holding two or three litres is employed, and into this a considerable quantity of *Cabomba*

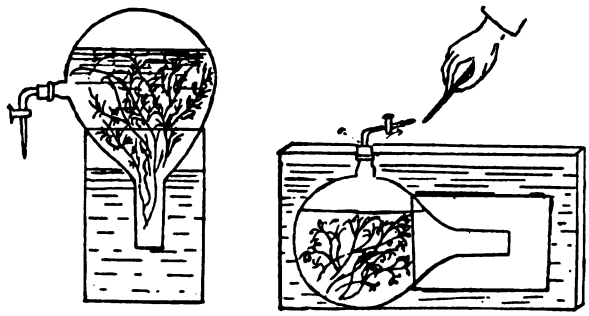

FIG. 3.

Caroliniana or *Myriophyllum spicatum* is introduced (Fig. 3). The water is thoroughly charged with carbon dioxide, and the plants are then exposed to the sunlight. Little streams of gas are seen to pass upward from various points, and when sufficient gas has collected at the top of the flask, the latter is immersed in a tank of water in a horizontal position in such a manner that the gas is directly under the opening (Fig. 3). On turning the stop-cock and applying a splinter of wood with a spark on the end of it the gas will be found to be oxygen.

When the supply of carbon dioxide in the water has been exhausted the plant will no longer give off bubbles of oxygen. The process may be again initiated by passing carbon dioxide into the receiver. Before testing it is best to allow the carbon dioxide to become exhausted, since in recharging the water it is impossible to avoid collecting some of this gas over the liquid and adulterating the oxygen. On standing it is gradually absorbed by the water and consumed by the plant. In any case the gas collected is not pure oxygen, but it is sufficiently rich in this substance to make an effective demonstration.

The Mapping of Electric Lines of Flow.—(A. Zinger, *Zeitschr. f. phys. und chem. Unterricht, XIII.*, 336.) A piece of filter paper is laid upon a glass plate and wet with a solution of zinc sulphate. Over it are sprinkled fine zinc filings. The terminals of a strong direct current (a house current of 110 volts) are pressed down upon the paper at some distance apart. When the circuit is closed the electrolytic precipitate from the filings soon brings out clearly the distribution of the lines of flow. Different combinations with respect to the number, position and form of the electrodes give rise to a great variety of figures. Beautiful figures are obtained when conducting substances, as metallic plates, are placed in the way of the current, or portions of the paper are cut away so as to interpose non-conducting places. Other electrolytes and metals may also be used, but zinc sulphate and zinc seem to give the best results.

Cox's Mercury Break.—We have examined the Motor Mercury Break (Mackenzie Davidson's patent) made by Mr. H. W. Cox, of Cursitor Street, London, W., and we consider it a most valuable adjunct to an induction coil. It consists of a rotating iron vane spun round by a small motor and dipping at each revolution into mercury, thus completing the primary circuit of the coil. The motor needs a battery of from six to twelve volts to spin it; this, of course, is against it if battery power is very scarce. But where this is available, together with a similar battery for the coil, the effects produced justify the means. The current for the coil used with the mercury break may be anything from that mentioned to the current direct from 100 volt mains. Its superiority over an ordinary hammer-break consists in the regularity of its action; this is an essential where the best effects are required with X-ray tubes and fluorescent screens.

ITEMS OF INTEREST.

GENERAL.

THE proceedings at the last general meeting of the Assistant-Masters' Association, held at the beginning of this term, afford ample evidence of the growing importance of this educational body. Its incorporation will be shortly accomplished, and the fact that its officials have managed to secure the interest of a number of members of Parliament shows that the assistant-masters intend to secure a fair hearing for the resolutions of their Association. We are glad to notice that the Association has invited other educational societies to confer with it in order that a unanimous opinion may be arrived at with reference to the Government's educational proposals. It is satisfactory to be able to record that there is a growing disposition on the part of the Assistant-Masters' Association to deal less with details as to the professional position of its members, and to give more and more attention to methods of teaching and to the work of building up a science of education.

THERE is little danger that England will move too quickly in educational reform. The student of education is apt to become appalled to find how many times a serious deficiency in our national provision for education may be pointed out and no attempt follow to remedy it. Take the question of the supply of training colleges for elementary teachers. Has it not been before the responsible authorities and the public for many years past? Yet in the last Blue-book containing the reports for 1900 on the work of the training colleges, Mr. Adam Rankine has again to tell the sorry tale: "The number of our training colleges is insufficient. Many teachers would gladly avail themselves of the advantages of college life, but there is no room for them. Nonconformists especially are at a disadvantage, as there are many cases of King's scholars high up in the first class who cannot get a place. Another undenominational college for women seems urgently needed." Two or three pages later Mr. Rankine returns to the charge: "The supply of means of training cannot be said to be adequate to the need. More colleges are required." If we only had a strong, earnest Minister of Education! He would not wait to have such remarks repeated several years in succession.

A RECENT circular of the Board of Education points out that the sight of children is liable to be injuriously affected by two distinct classes of conditions—namely, (*a*) from errors of refraction—that is to say, from faulty shape or proportion of the eyeball, producing the several conditions of myopia or short-sight, hypermetropia or flat-eye, and astigmatism, all of them liable to occasion much strain and difficulty in using the eyes, and some of them liable to such an extent of aggravation, during and in connection with school life, as seriously to cripple the future usefulness of the individual; (*b*) from various forms of disease, many of which are inconspicuous in their origin and easily escape notice unless special attention is paid to the possibility of their occurrence, and some of which are highly contagious, and may become of serious import to the school as a whole, as well as to the original sufferers. The vision of every pupil should be tested on admission to a school by means of "test-types," and whenever vision falls below a normal standard, the pupil's eyes should be examined by a surgeon. Teachers should make it a duty to observe any appearance of unnatural redness or soreness of the eyes, or any tendency on the part of a child to be often rubbing them when at work, and to take such precautions as the circumstances of each case may require. Any child suspected of suffering from contagious ophthalmia should not be readmitted without a medical certificate of fitness.

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THE British Consul at Stockholm, in his last report to the Foreign Office, says :—"After over fifty years' knowledge of my own country and about one-half of that time also of various other countries and their systems, I unhesitatingly state that I consider the United Kingdom is only fifth in the list as regards education ; Sweden, Denmark, Norway and Germany being all ahead of her. Why cannot we have a working knowledge of two or three other languages besides our own, as they have, and why do we not train our boys and young men to study foreign methods as the foreigner studies ours? There would be surprises on both sides if we did."

THE London Chamber of Commerce has issued a prospectus of the lectures and classes which have been arranged to prepare candidates for their examinations for certificates in commercial subjects. Attention was called to the scope of the lectures in our last issue, so that it is only necessary to add that copies of the prospectus can be obtained on application to the Secretary, London Chamber of Commerce, 10, Eastcheap, London, E.C.

THE Committee of the Society for the Protection of Birds offers two prizes, of £10 and £5 respectively, for the most useful papers on the best means of establishing a "Bird and Arbour Day" in England. The papers should be sent in not later than November 30th, 1901, post paid, to the Hon. Secretary, 3, Hanover Square, London, W., from whom full particulars can be obtained.

AT the 62nd annual meeting of the Union of Lancashire and Cheshire Institutes which was recently held, the Chairman stated that there are now 422 institutes in union with a total membership of 160,000. It is interesting to note that, while seventy-eight per cent. of the total number of lady candidates who presented themselves for examination by the Union last year were successful, only sixty-six per cent. male candidates obtained certificates.

THE Industrial Exhibition in Birmingham, which closes on November 2nd, is of great interest to teachers and to all interested in teaching, inasmuch as a very great portion of the Exhibition has been devoted to educational exhibits. The School Board, the School of Art, the Municipal Technical School, and the University, have gone to much trouble and expense to make the section illustrate fully the whole work of education in the city of Birmingham. The Municipal Day School exhibit illustrates very clearly the nature of the work carried on by its pupils; note-books in each subject belonging to students in each year are shown, and they are unaltered for exhibition purposes. These books show how in the elementary course absolute reliance is placed on the laboratory work of the pupil himself furnishing all necessary knowledge of a science subject, and indicate the falsity of the general supposition that time does not permit of such methods. In carpentry and iron work the samples show that the boys are trained thoroughly in the use of tools, and in accurate work to a definite scale.

THERE are four local public secondary schools in the county of Berkshire, all working under schemes of the Charity Commission. All these schools are now aided, directly or indirectly, by grants from the County Council. Berkshire is not well supplied with good public secondary schools for the middle and lower-middle classes, and the provision for girls is particularly deficient. The Technical Instruction Committee, desirous to encourage the development of public secondary schools in their administrative area, has formulated a series of regulations, under which it is proposed to make grants in aid towards the equipment and maintenance of technical education within these schools.

THE last report of the Plymouth Technical Instruction Committee records a significant arrangement which has been arrived at between this committee and the School Board for Plymouth with reference to the organised day school of science of this town. The compact has been duly ratified by the Board of Education, and the scheme already has been found to work satisfactorily. The elementary part of the course of work which distinguishes the curriculum of a school of science is taken by the pupils at the higher-grade school in connection with the School Board ; this section of their study being completed, the pupils are transferred to the technical school for more advanced instruction. There are, too, other evidences of a desire for a complete co-ordination of the educational work of Plymouth. The boys of the Portland Grammar School receive all their instruction in drawing at the technical school, and the Technical Committee and the School Board are working together for the institution of a course of instruction for fishermen at the marine biological station, and also for the establishment of ships for the training of boys for the merchant service. In the last undertaking they are assisted by the Navy League.

MESSRS. HEFFER, of Cambridge, have in the press two additions to their series of "Problems and Exercises in English History," by Mr. J. S. Lindsey, of which Book B (1399-1603) appeared in June. One of the new volumes deals with the period 1688-1832, and is intended both for those who are working for the Cambridge Local Examination in December, 1901, and those beginning to work for the Oxford and Cambridge Joint Board Examination, or the Irish Intermediate Examination next summer. The other new volume, Book H, covers the whole of British history, and will be adapted to the requirements of the Scotch Leaving Certificate Examination.

MESSRS. PHILIP HARRIS & Co., Ltd., Birmingham, have published a handy little diary and list of examinations for the present school year, which should prove very useful to science masters in every grade of school.

THE first number of *The Geographical Teacher*, the organ of the Geographical Association, appeared in the middle of October. It is intended to be of assistance to teachers of geography, and is written by well-known teachers of the subject, with the help of distinguished geographers interested in education. The magazine will be published three times a year, in the middle of February, June, and October. The price to teachers of geography, who are not members of the Geographical Association, is a shilling a number. Judging from the varied bill of fare offered in the contents of the first number, we have no hesitation in saying that no schoolmaster or schoolmistress responsible for geographical instruction can afford to be without this brightly written and attractively produced periodical. Already the editors, Mr. A. W. Andrews and Dr. A. J. Herbertson, have secured the active co-operation of a large number of recognised authorities in this branch of education, and we hope there is a great future in store for this latest addition to our pedagogic serials. *The Geographical Teacher* is published by Messrs. George Philip & Son.

DR. S. G. RAWSON discusses in the current *Contemporary Review* the old, though none the less important question: How to train properly our future handicraftsmen? After revising what is already familiar to readers of THE SCHOOL WORLD, viz., the admirable provision of technical education in continental countries and America, and its thorough character, the deplorable story of Great Britain's inadequate conception of what technical education really is, is told once more. The old apprenticeship idea is dead, and if we are to compete with our trade rivals on anything like equal terms, something as satis-

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factory and yet suited to modern ideas must replace it. Dr. Rawson suggests that boys of the future apprenticeship class should enter the workshop at 14½ years of age, and remain there for two years, attending, by compulsion, two afternoons and three evenings a week at the nearest Technical Institute. At the end of the two years the employer should send to the Technical School, as full-day students, for a period of at least two years, those of his apprentices, not of necessity all of them, upon whose work he has received favourable reports both from the Technical Institute and his own foremen. During the latter period the selected apprentice would receive his wages, and his holidays would be those of the "works" to which he is attached, so that he would have ample opportunities during the school vacation to practice and keep up his manual dexterity.

IT is clear that with the adoption of such a scheme as that proposed by Dr. Rawson the work of the Technical School would have to be placed in the hands of skilled, practical men as conversant with the conditions of the trade as with the science upon which the practice of the trade depends. He consequently maintains that the present heterogeneous collection of unrelated "classes" in subjects like shorthand and ambulance work, which at present seems the popular idea of the work of a technical school, will have to give place to a carefully-planned and properly organised course in practical technical science having a direct bearing on the work of the factory. We are in agreement with nearly everything Dr. Rawson has written in his article, but the thought will obtrude itself—how often must these comparisons between British and foreign systems of education be made before our countrymen will set to work seriously to remedy defects glaringly apparent to all earnest students of the subject?

SCOTTISH.

THE Glasgow and West of Scotland Technical College has for many years done excellent work under most unpromising conditions. Notwithstanding all the drawbacks as regards accommodation and equipment, no less than 4,000 students last year presented themselves for enrolment in the evening classes, and hundreds had to be rejected for want of room. The Governors of the College have long been alive to the difficulties and hindrances under which the work has been carried on, and have prepared plans for a new building on the present site which is to be furnished and equipped on the most approved modern lines. The estimated cost of such a building is £150,000 and of this £100,000 has already been subscribed. Dr. Andrew Carnegie has just promised the last £25,000, so that the success of the venture is secured. Hitherto the college has been connected with the South Kensington Department, and the income has been largely dependent on the amount of money obtained in grants. These necessities have produced uncertainty at all times, as the grants fluctuated very considerably. The Governors have accordingly severed their connection with the Board of Education, and the Scotch Education Department has agreed to give for the next five years an annual grant of £4,900 towards the work of the college.

RADICAL changes have just been announced by the Scotch Education Department in regard to the training of students in normal colleges. As stated in the Code of 1901, the separate examination at the end of the first year of training is to be discontinued, and the latest circular gives to the authorities charged with the training of teachers full powers to draw up courses of instruction on the lines which they think best suited for the different classes of students. In framing courses regard should be had to the following cosiderations: (*a*) The students dealt with fall into two main classes, (1) university students, (2) non-university students, and a separate course should be submitted for each class. (*b*) The subjects of instruction also fall into two main classes, viz., (1) those intended to secure a sufficiently high level of general culture on the part of the students and (2) professional subjects. (*c*) The work of the university students and in a less degree of the non-university students is to be arranged separately for the winter and summer session. The classes to be taken by students at the university are to be arranged in one or more groups, and in the arrangement regard should be had not so much to their convenience for obtaining a degree as to their value for the training of a teacher.

THE annual meeting of the Educational Institute of Scotland was held in the Royal High School, Edinburgh, on the 21st instant. The President, Mr. Menzies, Kirriemuir, in his retiring address said that the enormous gift of money by Dr. Andrew Carnegie for the encouragement of university education was an act of munificence unprecedented in the annals of education. Other professions and other men have expressed doubts as to the effect of this gift upon the welfare of the youth of the country. But they, the members of the Educational Institute, have no misgivings on the subject. Many of them, by bitter experience, know the difficulties and the hardships of pursuing with limited means a university course, and they rejoice that the path for their successors is now to be made comparatively smooth and easy.

THE annual general meeting of the Scottish School Board Clerks' Association was held in the offices of the Glasgow School Board. The subject of the supply of trained teachers led to an interesting discussion. Statistics were given which showed how far short of the demand comes the supply of teachers. The educational consequences of such a position received but scant consideration, but its financial aspect was very fully discussed. The average increase in salaries during the past few years amounts to between £20 and £30, and shows no signs of having reached its maximum. In view of the miserable salaries paid by School Boards in the old days when teachers were plentiful, members of the profession need waste no sympathy on them in their present distress.

IRISH.

THE Royal Commission on University Education in Ireland held a first sitting from September 19th to September 28th in the Royal University, Dublin. All the Commissioners were present, and the Presidents of the three Queen's Colleges, of Magee College, and the Catholic University College, Dublin, the Secretaries of the Royal University, Mr. H. M'Intosh, and Dr. Nicholas, heads of the Methodist Colleges, Dr. O'Dwyer, Bishop of Limerick, Dr. Clancy, Bishop of Elphin, Dr. Bernard, Fellow of Trinity College, Dublin, Sir Christopher Nixon, and some other representative people, were called to give evidence. The meetings were not public, but the minutes of the evidence taken will be published in a week or two.

SOME of the members of the Commission will meet for a few days towards the end of November for the consideration of the professional and technical part of University education. The Commission will sit in London for a few days, beginning the 17th December, and in January they will resume the hearing of evidence in Dublin. The Commissioners will also, it is expected, visit various colleges. As any scheme that may be adopted will have a far-reaching effect on the whole of Irish secondary education, much interest is felt in the proceedings, and in the schemes put forward by the various educational bodies in Ireland.

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THE Intermediate Board in October commenced the systematic inspection of secondary schools, which is part of their new scheme. The present inspectors, it is understood, are only appointed for a limited period, to report on the actual state of Irish schools, a proceeding which would more fitly have taken place before the recent Commission drew up their reformed scheme.

IN the beginning of October a deputation from some of the secondary schools waited on the Dublin Corporation to ask for a share in the grant given to the city for technical instruction by the new Department of Agriculture and Technical Instruction. The deputation was favourably received, but objections are being brought against giving to secondary schools any of the limited grant which, supplemented by the city rates, has to support the city Technical Schools. Secondary schools do not, it is said, give technical, but general, education, and to a class in which the parents can afford to pay for their children's education, and from which few pupils would afterwards go to technical schools, or even to callings for which such schools prepare. The secondary schools already receive endowments for science teaching from both the Science and Art grant and from the Intermediate Board.

DURING the month of October Mr. Ablett gave a course of lectures and illustrative lessons in Alexandra School, Dublin, on his system of teaching drawing and painting. The system has been adopted by the new Department and the Intermediate Board in their joint programme for art instruction in secondary schools.

DURING October the Hermione Lectures—annual courses of lectures in art instituted in Alexandra College in memory of the late Duchess of Leinster—were delivered by Dr. C. Waldstein, who took Greek art in connection with the recent excavations in the Argive Heraum as his subject.

WELSH.

AT the recent Church Congress Mr. P. P. Pennant told the story of the Welsh county schools, and suggested that they will supply a model for the organisation of secondary education in England. Twenty years ago, he said, there were 27 endowed secondary schools in Wales with an aggregate yearly endowment of £12,800, and educating 1,540 boys. In addition, 2,290 boys and 1,870 girls were in private schools. For last year, under the Central Welsh Board, there were 94 county schools, 22 for boys, 22 for girls, 43 dual schools, and 7 mixed schools. The number of pupils was 7,445—3,799 boys and 3,646 girls. Of these, 5,228 were admitted from elementary schools. It would be interesting if to this account could be added the number of pupils in private schools. The list, of course, does not include Brecon, Denbigh, Llandovery, Ruthin Public Schools.

IT is stated that the percentage of attendance in the elementary schools is for England 82·1, whilst for Scotland it is 83·75. Wales, however, can only show for last year 77·9. At a recent meeting of the Carnarvon School Board, the Chairman drew attention to the fact that Carnarvon had an average better than the average of Wales. The average of Carnarvon appears to be 78. It will be a pity if the fact that 75 or 80 per cent. of the children in the county schools come from the elementary schools is allowed to overshadow the irregular attendance in the elementary schools.

MR. W. J. RUSSELL, the retiring President of the Welsh County Schools' Association, ma e a statesmanlike speech to his fellow Heads of county schools last month. He claimed for the Association a large and honourable share in modelling the whole of the educational history of Wales. He urged that every head of a county school should join the Association. He did not, however, suggest, as some will think he might have suggested, that some teachers' organisation should include all the teachers in county schools, if not, indeed, as the most enterprising would wish, all the teachers of all the schools. He brought forward the two great questions before the county schools, viz., the Science Memorandum of the Board of Education and the Pension Scheme. No doubt his well-weighed words will affect the attitude of the teachers, and probably carry them with him. Meantime, a conference has been held at Shrewsbury to gauge the general opinion of county School Governors and to bring about acceptance of those schemes. The idea of the Central Welsh Board in promoting conferences to discuss educational policy is most valuable. It cannot but be productive of good to stimulate public opinion—to form educational thought—and to create and confirm a public educational policy.

THE degree of M.A. is obtained in the University of Wales by the presentation of a thesis approved by the examiners in its subject and in its execution. If the candidate has obtained Honours in the B.A. examination, he is free to proceed to his thesis, but if he was a pass-candidate only in his B.A. subjects, he has then to pass an M.A. General Preliminary examination. The following are the subjects on which theses were written this year by successful candidates: In Greek, "A comparison of the principles and methods of Herodotus and Thucydides as historians." In English, "The Arthurian Legend in English Literature." In History, (1) "William de Braose," (2) "The Norman Conquests in Wales up to 1100 A.D." It is not necessary for the thesis to be written whilst the student is still in residence in the Welsh Colleges; so that any research necessary can be carried on by the student in those places where there are the best facilities for gathering materials.

CURRENT HISTORY.

IN September violent anarchism aimed an all too successful blow not at a hereditary ruler, but at the recently re-elected chief of a nation numbering millions. William McKinley's name was not very popular in this country ten years ago. We knew him then as the author of a "tariff" that hit hard at certain British manufactures, and especially at the tinplate industry of South Wales. But in the shadow of the great disaster which has befallen the United States of America, we think only of the great patriotic statesman, and of the blood ties which unite the two peoples. The death of each President of the American Republic that has perished by violence has its own moral. We must not dwell on them now. We note merely the curious effect of the American Constitution in its modern working. The Vice-President is chosen at the same time and by the same method as his chief. It has become usual to choose a man who will be pleasing to the party defeated in the great prize, and yet automatically that is the man who may, as in this case, rule the United States for the greater part of the period for which the candidate of the opposite party was chosen.

EARLY in August died Queen Victoria's eldest child. Her history is bound up with that of United Germany almost as much as that of Crispi was with that of United Italy. The birth of the German Empire and that of the kingdom of Italy are events in the lives of these two. Indeed, the completion of Italy by the occupation of Rome was a direct result of the war which immediately led to the proclamation of King William of Prussia as German Emperor in the palace of Ver-

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sailles. Some of us are old enough to remember the Red Prince and his doings in the Franco-German war, and it seems but yesterday since his tragic death after ninety days of King-Emperorship gave rise to much discussion, medical and other. Amid the many dramas that made up the life of Prince Bismarck, none is more noteworthy than the contest between the man of "blood and iron" and the married pair who hoped to introduce more "English" notions into the German Government, and whose hopes were cruelly disappointed by rapid disease. The unsought revenge for Bismarck's triumph over the wife and mother came when he appealed in vain for her help with her son, who "dropped the pilot" in 1890.

THERE has been much debate this summer as to whether there is a Liberal party, and if so, what are its principles. This is a question that, as a practical one, does not concern us onlookers. But it should set us thinking historically. For two hundred and twenty years England has had two parties, one called Whig or Liberal, the other Tory or Conservative, and between the Whig-Liberals or the Tory-Conservatives of one generation and the next there has been a certain connection, sometimes purely personal, sometimes of principle. But the continuity of the two phenomena has deceived us, leading us to think that they are continually the same, whereas in truth, like the particles of a hill-capping cloud, they are in constant change. To put the matter briefly, we may say England is generally conservative, resting, that is, on the decisions of the immediately preceding generation, which appear to the average Englishman as the wisdom of the immemorial past. Now and then a desire for change brings the Whig-Liberals to power. Such occasions were the "Protestant" revolution of 1688, which gave us Dutch and Hanoverian sovereigns; the growth of industrial England, which brought about the Reform Acts of 1832; and the desire for "liberty" and extended franchise which culminated about 1870. Otherwise, and even at intervals during these "Liberal" periods, England cries "halt!" and prefers to rest. Therefore, till another great desire for constitutional change arises, we are not likely to have another "Liberal" flood.

SENIOR CAMBRIDGE LOCAL EXAMINATION, DECEMBER, 1901.

Revision Test Papers.

Arithmetic.

A. (1) Find, by factors, the G.C.M. of 561 and 1105.

What is the smallest number which leaves a remainder 7 when divided by 8 or 12 or 25 or 28?

A. (2) Simplify the expression :— $\left(\frac{3\frac{1}{7}}{4\frac{2}{7}}+\frac{4\frac{1}{5}}{5\frac{5}{8}}\right)\div\left(\frac{5\frac{1}{4}}{4\frac{1}{8}}+\frac{4\frac{4}{5}}{7\frac{3}{7}}\right)$.

A. (3) Add together 4·136, 15·1$\dot{5}$, ·000$\dot{7}$ and 5 161.

Divide 64·1938 by 1·0575, correct to three places of decimals.

A. (4) Find the length of the side of a square field equal in area to a rectangular field whose length is 3 fur. 39 po. ½ yd., and whose breadth is 2 fur. 21 po. 4½ yds.

A. (5) A dealer buys French silk at the rate of 4 francs 50 centimes per metre, and sells it at the rate of 4s. 2d. per yard; what does he gain, or lose, on 100 yards?

[1 metre equals 40 inches and 25 francs equal £1.]

A. (6) Find the true discount on a bill of £122 5s. due 5 months hence at 4½ per cent. per annum.

B. (7) A butter merchant buys 3 cwt. 1 qr. 14 lbs. of butter at £5 4s. per cwt.; half of it he sells at a profit of 18 per cent., one-third at a profit of 15 per cent., and the remainder at a profit of 6 per cent.; what is the amount gained on the transaction?

B. (8) A man saves £400 a year, which he invests annually so as to bring in an interest of 4 per cent. how much will he have saved at the end of 4 years, reckoning compound interest? Give your answer correct to the nearest shilling.

B. (9) A trustee invests half of a certain sum of money, which he holds in trust, in a 3¼ per cent. stock and half in a 4½ per cent. stock. If the price of the former stock be 105 and the whole return on the investment be at the rate of 3¾ per cent., what is the price of the latter stock?

B. (10) The owner of a certain estate lays it out in building plots, some of which he sells and some he rents to certain occupiers. He realises £6,400 by his sales, which he invests at 3 per cent., and after paying 4 per cent. on the gross rentals collected to an agent, and 1s. 2d. in the £ on all his receipts after deducting the agent's commission, has £1,130 left. Find the gross rental of his property, the agent's commission and the income-tax paid.

Answers.

(1) 17; 4207. (2) $\frac{9}{11}$. (3) 24·449454090; 60·703.
(4) 3 fur. 7 po. 1¼ yds. (5) £4 12s. 8d. (6) £2 5s.
(7) £2 12s. 8d. nearly. (8) £1,698 12s. (9) 108.
(10) £1,050; £42; £70.

English Grammar.

(1) Analyse:

There is a flower, the *lesser* Celandine,
That shrinks *like* many more from cold and rain,
And the first moment *that* the sun *may shine*,
Bright as the sun himself, 'tis out again.

(2) Parse the words in italics in the preceding passage.

(3) Describe fully the formation of the possessive case. What theory as to the origin of the apostrophe was once held?

(4) What rules guide you in the formation of the plurals of (i.) compound nouns; (ii.) foreign words? Account for the number of—riches, scissors, banns, thanks, hopes, wages.

(5) Parse the italicised words in the following:—*Methought* the news was good; *to*-day; woe is *me; no, thank* you; they are *none* the *less* lazy; he is quite *well.*

(6) Discuss the syntax of the following sentences:—

(*a*) Their casualties were less than we expected.
(*b*) I go a-fishing.
(*c*) We never wish to visit you again.
(*d*) Neither you nor he are innocent.

(7) Distinguish between the use of the conjunctions *for* and *because.* In what ways may interjections arise? What is the etymology of—

Adieu! Zounds! Wellaway!

(8) What are doublets? How have they arisen?

Give instances of the use of the prefix *be-*, and the suffix *-en*, with explanations of their force.

English Composition.

Write an essay on one of the following subjects:—

(*a*) The pen is mighter than the sword.
(*b*) Charles Dickens.
(*c*) Capital punishment.
(*d*) The freedom of the Press.
(*e*) Old English sports.
(*f*) *Esprit de corps.*

English History, 1688-1832.

(*Q. 6 and four other questions* only *to be answered.*)

(1) In what ways and for what reasons did the Revolution of 1688 make great changes in English foreign policy?

(2) Sketch the career of Lord Carteret and account for his failure as a statesman.

(3) Write explanatory notes on the terms, *Economical Reform*, *King's Friends* and *Rotten Boroughs*, bringing out their mutual connexion.

(4) Write an account of the history of Ireland during the period of "Grattan's Parliament," in such a way as to throw light on the causes of the Union and the agitation for Catholic Emancipation.

(5) Distinguish between the several ways in which Napoleon tried to ruin Great Britain, and account for his ultimate failure.

(6) Describe the chief changes effected by the Industrial Revolution, illustrating your answer, if possible, by a sketch map.

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Geography.

(1) Draw a map of India. Insert and name the rivers Ganges, Indus, Godavari; the Dekkan Plateau and its boundaries, the Golconda and Malabar coasts, and the towns of Patna, Colombo, Goa, Jodhpur, Allahabad, Seringapatam, Bombay, Amritsar, Karachi, Calicut.

(2) Show how the north-west frontier of India has been, and continues to be, important politically.

(3) What is there of geographical significance attaching to:—

(*a*) The course of the Hwang-ho.
(*b*) The Kuroshiwo (Black Stream).
(*c*) The position of Afghanistan.
(*d*) The trans-Siberian railway.
(*e*) "Wallace's Line."

(4) Give an account of the trade and communications of Anatolia, and show how its history has been affected by its geographical position.

(5) What effects on the Mediterranean as a commercial highway had (1) The fall of Constantinople; (2) The opening of the Suez Canal?

(6) Draw a map of Scotland. Locate the following:—Ben Nevis, Ben Lomond, Ben Macdhui; Inverness, Kirkwall, Stornoway, Aberdeen, Paisley, Perth, Stranraer; the Spey, Clyde, Tay; Jura, Skye, Arran; Loch Linnhe, Dornoch Firth and Pentland Firth.

(7) Show how the application of machinery to the manufacturing industries of England resulted in the redistribution of the large towns. Estimate the consequences of the Kentish coal-mines being successfully worked.

(8) Give reasons for the location of the cotton industry in Lancashire, and not in Yorkshire; (2) shipbuilding on the Clyde; (3) linen manufactures at Belfast; (4) the making of hand-made lace at Honiton; (5) the leather manufactures of Northampton.

(9) Explain the prevalence of south-westerly winds in the British Isles.

Estimate the effect of the Gulf Stream on the climate.

(10) What is meant by (1) "the midnight sun"; (2) "universal time"? Explain fully.

Henry V.

(1) Explain, with reference to the context, the following passages:—

It is not well done, mark you now, to take tales out of my mouth, ere it is made an end and finished. I speak but in the figures and comparisons of it.

Who cannot see many a fair French city for one fair French maid.

If you grow foul with me, Pistol, I will scour you with my rapier.

Say'st thou me so? is that a ton of moys?

'Tis a hooded valour, and when it appears it will bate.

Can sodden water,
A drench for sur-reined jades, their barley broth,
Decoct their cold blood to such valiant heat?

(2) The age of Elizabeth was an age of expansion. Show, from the play before you, how this affected Shakespeare.

(3) What purpose do the choruses serve?

(4) Explain the following words and phrases:—lavoltas, firk, scambling, farced, ancient, boot, it sorts well with your fierceness, sconce, bawcock, curtle-axe, kecksies.

(5) Paraphrase the Archbishop's description of the division of "the state of man in divers functions."

(6) Discuss the criticism that the play of "Henry V." ends in an anticlimax.

(7) Write notes on the characters of Nym, Fluellen, Bates, and the Constable of France.

Spenser's Faërie Queen.

BOOK I.

(1) Explain the double allegory, spiritual and historical, of the story of the Red Cross knight.

(2) Describe the chief sources from which Spenser drew his materials.

(3) "Spenser writ no language." Discuss this at length, with examples.

(4) Explain the following words and phrases:—origane, hight, hurtlen, weet, esloyne, faytor, portesse, paynim, mall, heben, lin, graine, eyas, builder oak, dry dropsie, rusty blood, our feeble harts embossed with bale, seventold teme, shaume, purchas, impe, trinal triplicities.

(5) What do you know of—Aldeboran, Typhœus, Archimago, St. George, Titan, Limbo lake, Orion's Hound, the Wand'ring Wood, Merlin, Old Ninus, Hecate?

(6) Write a note on the character of Sir Satyrane and of Kirkrapine.

(7) How far is the Faërie Queene a patriotic poem?

French.

I.

(1) Give the English and plural of *l'ail* and *le mal*, the English and feminine of *pâlot*, *exprès*.

Why does the feminine of *contigu* take a "diaeresis," and why is a "circumflex" placed on the past participle of *devoir* in the masculine and not in the feminine?

(2) Give five masculine endings of French nouns and five feminine endings, with any exceptions under each head.

(3) Construct six sentences to show the position of conjunctive personal pronouns in French, and translate the sentences into English.

(4) Give the present indicative in full of *pouvoir*, *contrefaire*, *repaître* and *croître*, and the past participle of *lire*, *luire*, *prendre*, and *séduire*.

(5) Compose sentences to include one of the following:—*maint*, *soi*, *tout* (adj.), *tout* (adv.), *mieux*, *meilleur*, *propre*, *dont*, *de qui*, *duquel*.

II. Translate into English:—

(*a*) La route du Simplon que nous allons suivre est une merveille du génie humain. Napoléon se souvenant de la peine que devait avoir eu Annibal à faire fondre autrefois les Alpes avec du vinaigre, comme le racontent sérieusement les historiens, a voulu épargner ce travail aux conquérants qui désireraient rentrer en Italie, et a fait exécuter en trois ans ce chemin miraculeux. Il fallait que le vinaigre antique fût d'une force terrible; car cent soixante mille quintaux de poudre et dix mille hommes suffirent tout au plus à faire à l'âpre flanc de la montagne cette imperceptible raie qu'on appelle une route.

(*b*) Par les temps de villégiature enragée, si, parmi les pseudo-campagnards qui pullulent dans l'Ile de France, il vous arrive de rencontrer un excentrique, qui a élevé à la hauteur d'une passion son goût pour quelques unes de nos occupations rustiques, vous pouvez parier que celui-là est tout frais échappé à la galère parisienne; vous gagnerez. Les natifs sont trop blasés sur ces sortes de jouissances pour les savourer avec de tels emportements. La toute-puissante attraction de la nouveauté n'est pas étrangère à l'enfièvrement avec lequel ces néophytes ont enfourché leur dada champêtre, quel qu'il soit; l'influence de la mode, celle de la vanité ont également figuré pour quelque chose dans ces vocations enthousiastes.

III. Translate into French:—

Whenever a war breaks out, the utter ignorance of the population in everything relating to the use of arms is made painfully evident. Mechanics in general know as little how to use a rifle or a sword as a quadrant or a telescope, whereas they should be as familiar with both as with the way to the parish church. Historians have stated as the reason for the unrivalled skill of the English archers that the whole male population was from the cradle accustomed to the use of the bow. For the bow we should now substitute the rifle, in the use of which every man in England should be skilful.

IV. Translate:—

Cela arrive comme marée en carême.
Avis au lecteur.
Morte la bête mort le venin.
Chassez le naturel il revient au galop.
Ménager la chèvre et le chou.

Euclid.

(1) If two angles of a triangle be equal to one another, then the sides also which subtend the equal angles are equal to one another.

(2) ABC is an isosceles triangle in which the side AB is equal to the side AC; if equilateral triangles AFB, AEC be described on the sides AB, AC, and FE be joined, show that FE is parallel to BC.

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(3) In any triangle ACB, CF is perpendicular to AB and produced to G, so that FG equals CF; CE is also drawn to the middle point E of AB and produced so that ED equals CE; show that the triangle AGB is equal in all respects to the triangle ADB.

(4) Divide a given straight line into two parts so that the square on the one part may be equal to the rectangle contained by the whole line and the other part.

(5) Describe a circle of given radius which shall touch two given circles.

(6) The angle in a semicircle is a right angle; the angle in a segment greater than a semicircle is less than a right angle; the angle in a segment less than a semicircle is greater than a right angle.

AD is the perpendicular drawn from the angular point A to the base BC of an acute-angled triangle ABC; show that the square on AD is greater than the rectangle contained by BD and DC.

(7) Describe a circle about a given triangle.

If the centres of the inscribed and circumscribed circles of a triangle are coincident, the triangle is equilateral.

(8) If a straight line be drawn parallel to the base of a triangle, it cuts the side or sides produced proportionally.

ABC is any triangle and DE is drawn parallel to BC cutting the sides in D and E. If the straight line joining A to any point G in the base BC (or BC produced) cut DE (or DE produced) in F and GH, FH be drawn parallel to BA and AC respectively to meet in H, show DH and HC are in the same straight line.

(9) If a straight line be perpendicular to each of two intersecting straight lines at their point of intersection, it is perpendicular to the plane in which they are.

A sphere is cut by a plane; prove that the straight lines joining the centre of the sphere to all the points in the common intersection of the sphere and the plane are equally inclined to the plane.

Algebra.

(1) If any rational and integral expression which contains x vanish when a is put for x, then will $x-a$ be a factor of the expression.

Find the factors of $(y-z)^3+(z-x)^3+(x-y)^3$.

(2) If $\sqrt[3]{x^3+ax^2-a^2x-a^3}+\sqrt[3]{x^3-ax^2-a^2x+a^3}=a$, show that $x(2x-a)(x+2a)=4a^3$.

Find the square root of $(x+a)(x-a)(x-2a)(x-4a)+9a^4$.

(3) Find the condition that the roots of $ax^2+bx+c=0$ may be (i.) both positive, (ii.) opposite in sign but the greater of them positive.

If α and β be the roots of this equation, form the equation whose roots are $\alpha-\beta$ and $\alpha^2-\beta^2$.

(4) Solve the equations:—

(i.) $\sqrt{9-x}+\sqrt{4+x}=5$;

(ii.) $\dfrac{8x-1}{8x(x+1)}+\dfrac{8x(x+1)}{8x-1}=\dfrac{5}{2}$;

(iii.) $x+y+z=1$;
$2x+3y+4z=5$;
$4x+9y+16z=25$.

(5) Given that $\dfrac{x}{y-z}=a$, $\dfrac{y}{3-x}=b$, $\dfrac{z}{x-y}=c$, prove that $ab+bc+ca+1=0$; and also that

$$\frac{x^2(y+z-x)}{a(1+bc)}=\frac{y^2(z+x-y)}{b(1+ca)}=\frac{z^2(x+y-z)}{c(1+ab)}.$$

(6) The sum of n terms of an Arithmetical Progression is n^2, but if the first term be increased by 24 and the common difference by 31, the sum of n terms will become n^3. Find the number of terms in the series.

What value must a have so that the sum to infinity of the series $3a+a\sqrt{3}+a+\dfrac{a}{\sqrt{3}}+\ldots\ldots$ may be 9?

(7) Find the sum of the coefficients in the expansion of $(1+x)^n$ where n is a positive integer.

Find the value of

$$1+3n+5\frac{n(n-1)}{1\cdot2}+7\frac{n(n-1)(n-2)}{1\cdot2\cdot3}+\ldots\ldots$$

where n is a positive integer.

(8) Prove that $\log. a^m = m \log. a$, and that

$$(\log._c b)(\log._b a)(\log._a c)=1.$$

If $\log._{10} 2=\cdot30103$ and $\log._{10} 3=\cdot47712$, find the position of the first significant figure in $\left(\frac{1}{200}\right)^{11}$ and the logarithm of $\sqrt[4]{\cdot024\times8\cdot1}$.

(9) Sum the series:—

(i.) $\dfrac{1}{\lfloor2}+\dfrac{2}{\lfloor3}+\dfrac{3}{\lfloor4}+\ldots+\dfrac{n}{\lfloor n+1}+\ldots$ to n terms and ad inf.;

(ii.) $1\cdot2\cdot3+2\cdot3\cdot5+3\cdot4\cdot7+\ldots$ to n terms.

Show that the sum of the squares of all the odd numbers up to $2n+1$ is greater than the sum of all the even numbers up to $2n$ by $(n+1)(2n+1)$.

Answers.

(1) $3(y-z)(z-x)(x-y)$. (2) $x^2-3ax-a^2$.

(3) $a^3x^2\mp a(a-b)\sqrt{b^2-4ac}\,x-b(b^2-4ac)=0$.

(4) (i.) 5 or 0; (ii.) $\frac{1}{2}$ or $-\frac{1}{4}$; (iii.) 1, -3 and 3.

(6) 17; $3-\sqrt{3}$. (7) 2^n; $(n+1)2^n$. (8) 26th; $\bar{1}\cdot82217$.

(9) (i.) $1-\dfrac{1}{\lfloor n+1}$; 1; (ii.) $\frac{1}{2}n(n+1)^2(n+2)$.

JUNIOR CAMBRIDGE LOCAL EXAMINATION, DECEMBER, 1901.

Revision Test Papers.

Arithmetic.

A. (1) An institution uses on an average 12 tons 3 cwt. 1 qr. of coal in a week; what will be the total consumption in 2 years 13 weeks 2 days?

A. (2) Simplify:— (i.) $1\frac{1}{14}\frac{9}{65}$; (ii.) $3\frac{1}{7}-2\frac{1}{15}+4\frac{5}{21}-1\frac{8}{35}$;
(iii.) $3\frac{1}{143}\times4\frac{1}{7}\frac{0}{7}\div1\frac{28}{187}$.

A. (3) Multiply 36·415 by 220; and divide 216·711 by ·008756.

A. (4) What is the dividend on £14,684 16s. at 7s. 9½d. in the £?

A. (5) A man runs at the rate of 4 metres 86 centimetres per second; how far will he run in 5 minutes 30 seconds? Supposing a metre is equal to 40 inches, how long will he take to run 2 miles 530 yards?

A. (6) In how many years will £840 amount to £964 19s. at 3½ per cent. per annum, simple interest?

B. (7) Find the value of the sum of $\frac{5}{7}$ of £6 5s. 5d., ·18$\dot{5}$ of £46 5s. 3¾d. and ·046875 of £2 8s.

B. (8) Three times the length of a rectangular field is four times its width; if it takes 21 minutes to walk round the field, how long will it take to walk from one corner to the opposite corner?

If the rate of walking be 3½ miles an hour, what is the size of the field in acres?

B. (9) The price of mutton is reduced by 12½ per cent., and a purchaser is thus able to get 1½ lbs. more for 10s. How much would he have to pay for 7 lbs. at the original price?

B. (10) A gentleman wishes to increase his income by £140 per annum clear after paying income-tax at the rate of 1s. 2d. in the £ by investing £4,800 in a 3½ per cent. railway stock. What price must he pay for the stock?

Answers

(1) 1,426 tons 9 cwt. 3 qrs. (2) (i) $\frac{52}{55}$; (ii.) $4\frac{3}{35}$; (iii.) 12.
(3) 8011·3; 24750. (4) £5,736 5s.
(5) 1,603 m. 80 cm.; 12½ mins. (6) 4¼ yrs.
(7) £13 3s. 2¼d. (8) 7½ mins.; 58⅘ acres. (9) 6s. 8d.
(10) 113.

Grammar.

(1) Parse the words in italics:—

Once more I would adopt the graver style,
A teacher should be *sparing* of his smile,
Unless a love of virtue *light* the flame,
Satire is, more *than those* he brands, *to blame*.

(2) Explain carefully:—verb of incomplete predication, retained object, gerund, strong verb, present perfect tense.

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(3) Distinguish between the uses of *that* and *who* as relative pronouns.

Why is it better to term these pronouns "conjunctive"?

(4) Analyse:—

No works shall find acceptance in that day,
When all disguises shall be rent away,
That square not truly with the Scripture plan,
Nor spring from love to God, or love to man.

(5) Explain the constructions in the following:—

(*a*) *Dinner over*, we shall rest awhile.
(*b*) *Methinks* I see a friend.
(*c*) He is not to be *laughed at*.
(*d*) *The* sooner *the* better.

(6) How are the consonantal sounds of English classified? What pecular difficulties does a foreigner experience in writing the English language?

(7) Essay on one of the following subjects. (Half an hour).

(*a*) Swimming.
(*b*) Stamp collecting.
(*c*) Silkworms.
(*d*) It is an ill wind that blows nobody any good.
(*e*) The advantages and disadvantages of Conscription.
(*f*) The development of electrical science.

Henry V.

(1) Why does Shakespeare refrain from bringing on Falstaff again in this play, as he had proposed to do in the epilogue to Henry IV., Part II.?

(2) Show how Shakespeare skilfully handles the incident of the conspiracy to enlist our sympathies for Henry.

(3) Explain with reference to the context:—

The humour of it is too hot, that is the very plain-song of it.
Each battle sees the other's umbered face.
The devil take order now; I'll to the throng.
Which Salique, as I said, 'twixt Elbe and Sala,
Is at this day in Germany called—Meisen.

(4) Explain—corantos, pax, accomplishing the knights, the king himself will be a clipper, this roaring devil i' the old play, murdering basilisks, if you would conjure in her you must make a circle.

(5) Write as much as you can remember of—

(*a*) Henry's exhortation to his men at Harfleur.
(*b*) Henry's argument, against Williams, that the king is not responsible for those who die in a righteous cause.
(*c*) Henry's reply to Montjoy's summons to surrender.

Lay of the Last Minstrel.

(1) Describe and discuss Scott's introduction of supernatural "machinery."

(2) Who were—Lord Dacre, Watt Tinlin, Michael Scott, Lord Cranstoun, St. Bride of Douglas, Hunthill?

(3) Write notes on—

The spectre hound in Man; bit his glove; black Lord Archibald's battle-laws; march-treason pain; German hackbut men; the running stream dissolved the spell; exalt the crescent and the star; had baffled Percy's best bloodhounds; Salamanca's cave.

(4) What do you know of the lady to whom the Minstrel is supposed to sing?

(5) Contrast the songs of the various minstrels at the feast.

English History, 1688-1832.

(*Q.* 6 *and four other questions* only *to be answered.*)

(1) For what reasons, and with what results, did England take part in the war of the Spanish Succession?

(2) Under what circumstances did Walpole's ministry begin and close? Mention the names of some of his more important political opponents, and indicate the leading points in the attacks made upon him.

(3) Warren Hastings has been called "the greatest Englishman in the eighteenth century." Describe carefully the achievements which have won for him this high praise, and mention, without description, any incidents in his career which have been held to diminish his claims to greatness.

(4) In what different ways did France assail Great Britain during the Revolutionary War of 1793-1802?

(5) What were the immediate causes of the Union between Great Britain and Ireland? What were the chief provisions of the *Act of Union*, and how were they subsequently modified?

(6) Enumerate, adding brief explanations, the chief territories which Great Britain lost during your period, illustrating your answer, if possible, by a sketch map.

Geography.

(1) On an outline map of Asia locate the Gobi "Desert," the Great Plain of China, the Deccan, the "Roof of the World;" trace the courses of the Hwang-Ho and the Lena; mark the position of Calcutta, Aden, Peking, Vladivostok, Kabul; and show the Tropic of Cancer.

(2) How is it that the monsoon district of Asia is the most densely populated? Explain fully.

(3) Write a short account of the inland drainage of Asia.

(4) Account for the chief locations of the following industries in the British Isles: cotton, earthenware, linen, chemicals, shipbuilding.

What sort of machinery is made at Grantham?

(5) What do you know about the Fen District, the Dogger Bank, Dartmoor, Carse o' Gowrie, Lakes of Killarney?

(6) Supposing the relative positions of Great Britain and Ireland had been reversed, what would probably have been some of the consequences?

(7) Explain:—desert, meridian, hinterland, treaty port, steppe.

(8) Illustrate, by reference to Chile, Norway, Greece, and Spain, various ways in which man is influenced by conditions of climate or physical features.

(9) Write a short account of the Gulf Stream.

(10) Why do the zones of light and heat not correspond exactly?

French.

I.

(1) Give the plural of—*quelqu'un*, *grand'mère*; the singular of—*les bestiaux*, *les émaux*; the feminine of—*malin*, *nul*; the masculine of—*compagne*, *cane*.

(2) Give the French for 61 and 15th; and the difference between *moins* and *moindre*.

(3) Distinguish between—*un voile* and *une voile*; *qui est-ce qui* and *qu'est-ce qui*.

(4) Write in full the present indicative of *dire*, the present subjunctive of *aller*, and the imperfect subjunctive of *souffrir*.

(5) Give the present and past participles of *taire*, *traire* and *vivre*, and the imperative negative of *s'asseoir*.

(6) Give the adjectives corresponding to the adverbs *impunément*, *gentiment*, *gaîment*, *violemment*, *confusément*.

II. Translate into English:—

(*a*) Guillaume le reçut avec une cordialité apparente; il lui promit la liberté des deux ôtages, le promena avec ses compagnons de château en château, de fête en fête, les fit chevaliers de haute milice (*militia*) normande et même les invita "pour essayer leurs éperons neufs" à le suivre dans une expédition guerrière qu'il allait faire en Bretagne. Harold et ses compagnons s'y conduisirent vaillamment; Guillaume et lui n'avaient qu'une même tente et une même table. Au retour comme ils chevauchaient côté à côté, Guillaume porte la conversation sur ses relations de jeunesse avec le roi d'Angleterre.

(*b*) La petite ville de province était pareille à toutes les petites villes qui sollicitent, sans l'obtenir, un embranchement de chemin de fer, comme si ce n'était pas l'unique distraction des indigènes d'aller tous les jours à la même heure sur la place de la Fontaine, voir arriver au grand galop la diligence avec son bruit joyeux de claquements de fouets et de grelots.

III. Translate into French:—

(*a*) Have you seen my two children playing in the garden? I have.

(*b*) How old are you? I am just 15.

(*c*) When did the travellers leave for England? They left yesterday at mid-day.

(*d*) Louis XIV. was only five years old when he was called to the throne after the death of his father. His reign was the longest of the French monarchy and lasted 72 years. During his minority his mother and Cardinal Mazarin governed France successfully; he governed by himself when he was twenty-two.

(*e*) All is not gold that glitters.

(*f*) It is six of one and half a dozen of the other.

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Euclid.

A. (1) Define a circle and parallel straight lines.

A. (2) Any two angles of a triangle are together less than two right angles. State the converse of this proposition.

A. (3) ABC, DEF are two triangles in which the angle ABC equals the angle DFE, the angle ACB equals the angle DEF and the side BC equals the side EF; show that the triangles are equal in all respects.

A. (4) If a straight line be divided equally and also unequally, the rectangle contained by the unequal parts, together with the square on the line between the points of section, is equal to the square on half the line.

A. (5) Equal chords in a circle are equidistant from the centre.

A. (6) If a straight line touch a circle, and from the point of contact a chord is drawn, the angles which this chord makes with the tangent are equal to the angles in the alternate segments of the circle.

A. (7) If two triangles be equiangular to one another, the sides about the equal angles shall be proportionals, those sides which are opposite to equal angles being homologous.

B. (8) ABC is an obtuse-angled triangle with the obtuse angle at C; D, E are any points taken in CA, CB; show that AB is greater than DE.

B. (9) Through the opposite angular points A, C of a parallelogram ABCD, any two parallel straight lines are drawn meeting the opposite sides (produced, if necessary) in the points E, F, G, H; prove that EFGH is a parallelogram and that AC bisects it.

B. (10) Describe a right-angled triangle, having given the hypotenuse and the sum of the sides containing the right angle.

Algebra.

A. (1) Simplify $2[4x-3-2(5x-3)+4\{2x-2x+3\frac{1}{2}\}]$.

Add together $(a+b)(b+c)$, $(a+b)(b-c)$ and $(a-b)(b+c)$.

A. (2) Multiply $3x+y-2z$ by $3x-y-2z$ and divide $x^4-\frac{5x^3}{6}+\frac{2x^2}{3}-\frac{5x}{24}+\frac{1}{16}$ by $x^2-\frac{x}{3}+\frac{1}{4}$.

A. (3) Find the Lowest Common Multiple of a^4-ab^3, a^3-a^2b, a^2b-b^3 and $a^4-b^4+ab(a^2-b^2)$.

Simplify: $-\frac{x^3-7x+6}{x^2-6x+5}\times\left(x-6-\frac{4(x-7)}{x+3}\right)$.

A. (4) Solve the equations:—

(i.) $\frac{x}{x-2}+\frac{3x}{x-4}=4$;

(ii.) $\frac{4x+3y}{5}=\frac{5y+3x}{4}=11$.

A. (5) A owes a certain sum of money but possesses only half-crowns and florins; if he uses twice as many half-crowns as florins he will pay 5s. too much, and if he uses twice as many florins as half-crowns, he will pay 5s. too little, the number of coins in each case being the same; what is the debt?

A. (6) What is the meaning of a^0, a^{-m}, $a^{\frac{1}{m}}$ where m is a positive integer?

Show that if $a^x=b$, $b^y=c$, $c^z=a$, then $xyz=1$.

Simplify:— $\left(\frac{8^{-2}a^{-\frac{1}{2}}b^{\frac{3}{2}}}{a^{\frac{5}{2}}b^{\frac{1}{2}}}\right)^{\frac{1}{3}}$.

B. (7) Solve the equations:—

(i.) $\frac{x-2}{3}+\frac{x-3}{2}=\frac{3}{x-2}+\frac{2}{x-3}$;

(ii.) $(x+1)(y+2)=4$, $(x+2)(y+3)=10$.

B. (8) When are quantities in Geometrical Progression?

Find the common ratio of a series of n terms in Geometrical Progression in terms of the first term, a, and the last term, l.

Sum the following progressions:—

(i.) $17\frac{3}{8}+16\frac{1}{8}+14\frac{7}{8}+$ .... to 18 terms;

(ii.) $2a^2-a+\frac{1}{2}-$ .... to infinity.

B. (9) A school form contains 25 boys of whom 3 belong to the first football team, and 5 to the second; in how many ways can a form team of eleven be chosen so as (i.) to exclude the first team but include the second team boys, (ii.) to include the first team but exclude the second team boys?

B. (10) Expand by the Binomial Theorem $\left(x^2-\frac{1}{x^2}\right)^7$.

Show that the sum of the coefficients of the odd terms in the expansion of $(1+x)^n$ is equal to the sum of the coefficients of the even terms.

Answers.

(1) $-12x-18$; $3ab+b^2+ac-bc$. (2) $9x^2-12xz-y^2+4z^2$; $x^2-\frac{1}{2}x+\frac{1}{4}$.

(3) $a^2b(a+b)(a^3-b^3)$; $(x-2)^2$. (4) (i.) $2\frac{2}{7}$; (ii.) $x=13, y=1$.

(5) £6 15s. (6) $\frac{1}{2a^{\frac{1}{2}}b^{\frac{1}{3}}}$. (7) (i.) 0, 5 or $\frac{13}{5}$; (ii.) $x=0$ or 3, $y=2$ or -1.

(8) (i.) $121\frac{1}{2}$; (ii.) $\frac{4a^3}{2a+1}$. (9) (i.) $\frac{\sqrt{17}}{\sqrt{6}+\sqrt{11}}$; (ii.) $\frac{\sqrt{17}}{\sqrt{8}+\sqrt{9}}$

(10) $x^{14}-7x^{10}+21x^6-35x^2+35.\frac{1}{x^2}-21.\frac{1}{x^6}+7.\frac{1}{x^{10}}-\frac{1}{x^{14}}$.

PRELIMINARY CAMBRIDGE LOCAL EXAMINATION, DECEMBER, 1901.

Revision Test Papers.

Arithmetic.

PART I.

(1) Multiply sixteen thousand four hundred and nineteen by five thousand two hundred and fifty-one. Express your result in words.

(2) Subtract £141 13s. $7\frac{3}{4}$d. from £1,410 10s. $6\frac{1}{4}$d.

How many times is £13 6s. $8\frac{1}{2}$d. contained in £960 3s.?

(3) Simplify:—

(i.) $3\frac{4}{5}-\frac{3}{8}+4\frac{1}{15}-2\frac{1}{30}$;

(ii.) $\frac{14\frac{13}{14}-3\frac{6}{11}\text{ of }4\frac{4}{7}}{13\frac{2}{7}\div4\frac{2}{5}}$.

(4) Add together 4·317, ·0123, 31·241 and 3·4071; and divide your result by 5·062.

(5) Find, by Practice, the value of $250\frac{1}{2}$ square yards of paving at 18s. $7\frac{1}{2}$d per square yard.

(6) What length of silk at 4 francs 81 centimes per metre must be given in exchange for 162 metres 50 centimetres of cloth at 1 franc 85 centimes per metre?

(7) What is the Simple Interest on £654 8s. 8d. for 3 years 4 months at $3\frac{3}{4}$ per cent. per annum?

PART II.

(8) A room is 21 feet long, 14 feet wide and 12 feet high; what length of paper, 27 inches wide, would be required to paper its four walls and its ceiling?

(9) How much India $3\frac{1}{2}$ per cent. Stock at $112\frac{1}{2}$ can be bought for £1,563 15s.? and what will be the income derived from the investment?

(10) £12 os. 6d. is made up of half-crowns, shillings and sixpences in the proportion of 4, 5 and 7. How many coins are there?

Answers.

(1) 86,216,169. (2) £1,268 16s. $10\frac{1}{2}$d.; 72. (3) (i.) $4\frac{17}{16}$; (ii.) $\frac{1}{2}\frac{1}{5}$.
(4) 38·9774; 7·7. (5) £233 5s. $6\frac{3}{4}$d. (6) 62 m. 50 cm.
(7) £81 16s. 1d. (8) 168 yards. (9) £1,390; £48 13s.
(10) 208.

English Grammar.

(1) Account for the spelling of the following words:—*finer, thinner; monkeys, diaries; referred, differed.*

(2) Make sentences from the following combinations:—

(*a*) Two nouns, a verb, an adverb and a preposition.

(*b*) Two nouns, two adjectives, a verb and an adverbial phrase.

(*c*) Two nouns, a personal pronoun, a relative pronoun, two verbs.

What is the use of conjunctions?

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(3) How do you know that *eat* is always a transitive verb, and that *laugh* is always intransitive? Parse fully—

He was being punished.

(4) When are *more* and *most* used in the comparison of adjectives?

Is it correct to say "This glass is emptier than that"?

(5) Decline these words:—theory, James, she, who.

(6) An adjective is frequently said to "limit the application" of a noun. What does this mean? What does a verb "agree with"? Give examples.

(7) What is meant by—antecedent, apostrophe, affix, apposition? Give examples.

(8) Parse fully the italicised words:—

Weary of myself, and sick of asking
What I am and what I *ought* to be,
At the vessel's prow I stand, *which bears* me
Forward, forward o'er the starlit sea.

(9) Name the subjects of the following sentences:—

(*a*) John, tell Henry to come here.
(*b*) England's sons will never fail her.
(*c*) That I deceived you is false.

What is an indirect object?

Robinson Crusoe, Part I.

(1) Describe the contrivances which Crusoe employed to make his life endurable on the desert island.

(2) Explain: Bill of exchange, procurator-fiscal, jerkin, assiento, equinox, calenture, savarina, boltsprit, scuttle, gudgeons, hawser, buskins, ingenio.

(3) Describe Crusoe's journey from Lisbon to Toulouse.

(4) Where are—Pampeluna, Orinoco, Cape St. Augustine, The Groyne, Yarmouth Roads?

(5) Contrast the conduct of the Spaniards and the Englishmen whom we meet in this story.

(6) What do you know of (*a*) Defoe), (*b*) Alexander Selkirk?

(7) What is your conception of Friday's character?
Did Defoe mean to convey a moral by it, and, if so, what?

English History, 1688-1815.

(*Q.* 6 *and four other questions* only *to be attempted.*)

(1) Describe briefly the nature of the relations between England and Scotland before the Union in Queen Anne's reign. What differences did that Union make in their relations? And what were the chief difficulties in the way of Union?

(2) Tell the story of the Jacobite Rising in 1745. Which side would you have taken, and why?

(3) Write an account of what Robert Clive did for Great Britain in India, illustrating your answer, if possible, by a sketch map.

(4) Mark off, as clearly as you can, the principal stages in the American Revolution, mentioning the principal persons and districts connected with each stage.

(5) In what different parts of the world was Wellington engaged in fighting during your period? Describe any one of his exploits which you think especially memorable.

(6) Show *either* (*a*) on a map of the world (by means of different shadings), *or* (*b*) in two parallel columns, the territories belonging to the English crown in 1688 and 1815 respectively.

Geography.

(1) On an outline map mark and name Dover, Plymouth, Windsor, Ryde, Southampton, Oxford; Yes Tor and the Downs; Dungeness and The Lizard; trace the courses of the Thames and the Tamar, and name the counties on the right bank of the former river.

(2) Explain the meaning of:— escarpment, fjord, volcano, peninsula, isthmus, promontory.

(3) Where and what are the following:—the Himalayas, the Crimea, Finland, St. Helena, Tasmania, Madrid.

(4) What districts of Great Britain are noted for (1) hops, (2) salt, (3) granite, (4) wheat, (5) silk goods?

(5) What are the principal articles we buy from Denmark, Australia, France, China, Canada, India?

(6) For what are the following towns noted? Say where they are:—Grimsby, Leith, Belfast, Darlington, Birmingham, Dundee.

(7) What European countries are washed by the Mediterranean Sea? Name their capitals.

(8) Where does most rain fall in England and why?

(9) Why did Columbus name the islands he discovered near America the West Indies?

(10) Of what use to a country are its rivers?

French.

I.

(1) Give the plural of—*roi*, *amiral*, *chameau*, *verrou*, *aide-de-camp*; the feminine of—*turc*, *franc*, *mou*, *lequel*, *collectif*.

(2) Write out the present indicative of *recevoir* and *rompre*, the present and imperfect subjunctive of *punir*, and the imperative of *avoir* and *être*.

(3) Translate:—I have some red wine; Have you not any wine? He has bread; How old are you? I am twelve years of age; More bread; He has no more bread; How much is that? Is he speaking? Do not give it to her.

(4) Give the cardinal numerals from 13 to 22, and the ordinals from 3rd to 12th.

II. Translate into English:—

Un meunier ne laissa pour tous biens à trois enfants qu'il avait que son moulin, son âne et son chat. Les partages furent bientôt faits: l'aîné eut le moulin, le second eut l'âne; et le plus jeune n'eut que le chat. Ce dernier ne pouvait se consoler d'avoir un si pauvre lot. "Mes frères," disait-il, "pourront gagner leur vie honnêtement en se mettant ensemble; pour moi lorsque j'aurai mangé mon chat et que je me serai fait un manchon de sa peau il faudra que je meure de faim."

III.

(1) From what verb does *disait* come? Give the 2nd person singular and plural of the present indicative.

(2) What part of speech is *honnêtement*? How has it been formed?

(3) Give the past participle and present infinitive of *pouvait* and *meure*.

(4) Give the other forms of *ce*.

(5) Parse "lorsque j'aurai mangé."

Euclid.

PART I.

(1) Define a plane surface, a plane figure and a circle.

(2) If two triangles have two sides of the one equal to two sides of the other, each to each, and the angles contained by these sides equal, then shall the triangles be equal in all respects.

Prove that the eight straight lines drawn from the angular points of a square to the middle points of the opposite sides are all equal.

(3) Bisect a given finite straight line.

(4) If a straight line fall across two parallel straight lines it makes the alternate angles equal.

If the opposite angles of a quadrilateral are equal, the figure is a parallelogram.

(5) ABC is any triangle; the side BC is divided at D, so that BD equals twice DC, and the side CA at E so that CE equals three times EA; show that the triangle EDC equals one-fourth of the whole triangle ABC.

(6) If the square on one side of a triangle be equal to the sum of the squares on the other two sides, then these two sides contain a right angle.

PART II.

(7) Draw a straight line parallel to the base BC of the triangle ABC cutting the sides AB, AC in D and E and so that BD equals DE.

(8) If a straight line be bisected and produced to any point the rectangle contained by the whole line thus produced and the part produced together with the square on half the line is equal to the square on the line made up of the half and the part produced.

(9) Describe a square equal to a given rectangle.

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Algebra.

PART I.

(1) If $a=1$, $b=2$ and $c=0$, find the values of (i.) $7ab-5bc+2ca$; (ii.) $7a+b(5c-a)$; (iii.) $7ab-5b(c+2a)$.

(2) Multiply $a^2-3ab+9b^2$ by $a^2+3ab+9b^2$.
Divide $3x^5-9x^4+8x^3-3x+1$ by $(x-1)^2$.

(3) Simplify:—(i.) $4x-\{3y-[z+(2y-z+x)]\}$;
(ii.) $a^2(b-c)+b^2(c-a)+c^2(a-b)+(a-b)(b-c)(c-a)$.

(4) Reduce to their simplest form:—
(i.) $\frac{x^2-y^2}{x^2-9y^2}\div\frac{y-x}{3y-x}$; (ii.) $\frac{a+b}{a-b}-\frac{a-b}{a+b}+\frac{4b^2}{a^2-b^2}$.

(5) Solve the equations:—
(i.) $(x-2)(x-3)+(x-2)(x-4)=2(x-3)(x-4)$;
(ii.) $\frac{x}{5}+\frac{y}{9}=1$, $7y-3x=24$.

(6) A student's bookshelves contain a certain number of classical books, an equal number of mathematical books, twice as many scientific books and ten times as many books on other subjects. If there are five shelves and each shelf contains on an average 56 books, how many scientific books does he possess?

PART II.

(7) Resolve into factors:—(i.) $6x^2-5x-21$; (ii.) $a^2+ac-b(b+c)$. Find the highest common factor of x^2+x-20, x^2-x-30, and $x^2+9x+20$.

(8) A certain number of persons promised to contribute equally to a fund amounting to £25; at the last five persons withdraw, and, as a consequence, the remainder have to pay 5s. more each; how many promised to contribute to the fund?

(9) Find the sum of 13 terms of the progression $12\frac{3}{4}$, 12, $11\frac{1}{4}$ . . . . and show that it is equal to the sum of 22 terms of the same progression. How do you account for this?

The sum of an infinite number of terms of a geometrical progression is $6\frac{1}{4}$ and the first term of the series is 5. Write down the first six terms.

Answers.

(1) (i.) 14; (ii.) 5; (iii.) −6. (2) $a^4+9a^2b^2+81b^4$; $3x^2-1$.

(3) (i.) $5x-y$; (ii.) 0. (4) (i.) $\frac{x+y}{x+3y}$; (ii.) $\frac{4b}{a-b}$.

(5) (i.) $3\frac{1}{3}$; (ii.) $x=\frac{5}{2}$, $y=\frac{9}{2}$. (6) 40.

(7) (i.) $(3x-7)(2x+3)$; (ii.) $(a-b)(a+b+c)$. $x+5$.

(8) 25. (9) $107\frac{1}{4}$; 5, 1, $\frac{1}{5}$, $\frac{1}{25}$, $1\frac{1}{25}$, $\frac{1}{125}$.

RECENT SCHOOL BOOKS.

Edited Books.

Boys and Girls of Other Days. (First Series.) By John Finnemore. 260 pp. (A. & C. Black.) 1s. 4d.—This volume will probably be found very serviceable where it is intended to be used, namely, in the upper standards of elementary schools. As a reading book it can boast of many excellences, clear type, well-considered matter, abundant and well-executed illustrations, and notes neither too many nor too few, neither too learned nor too long. There is, however, a still more serious intention underlying the author's work, and that is to make this volume impart something of the colour and form without which the teaching of history inevitably degenerates. The subjects range from the coming of the Romans down to Towton Field, and are certainly well done, though probably not even Mr. Finnemore himself would claim to be a literary artist. The historical imagination is but the gift of a few choice spirits, and they do not expend it on writing school books. Among the illustrations is the accompanying reproduction of Mr. Hamo Thornycroft's statue of Alfred the Great, which Lord Rosebery recently unveiled at Winchester.

Mr. Hamo Thornycroft's statue of King Alfred the Great.

Geography.

The British Isles and Europe. (The New Century Geographical Readers.) 232 pp.+xx. coloured maps. (Blackie.) 1s. 6d.—The British Isles are dealt with in the first 87 pages of this reader, the rest being devoted to Europe. There are numerous maps and illustrations both plain and coloured. They are all well fitted for giving a child a vivid impression of scenery and human occupations, and the text itself brings out the relation between man and his environment. We notice that the Gulf Stream is credited with marked effects on the temperature of North-Western Europe. According to last year's President of the Royal Meteorological Society, the last word has yet to be said about this phenomenon, in spite of the recent attacks on the soundness of the long-established theory.

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Science and Technology.

The Thermal Measurement of Energy. By E. H. Griffiths, M.A., F.R.S. viii. + 130 pp. (Cambridge University Press.)—This interesting book is a reprint of a series of lectures delivered at the request of the Technical Instruction Committee of the West Riding County Council. It will serve as an excellent introduction to the study of thermodynamics. Teachers should note the set of interesting lecture experiments, the novel diagram illustrating the operations of Carnot's cycle, together with the neat proof for the effect of pressure on the melting point of ice. The descriptions of the various methods for the determination of the mechanical equivalent contain far more detail than in most text-books, and, moreover, include the recent work of Callendar and Barnes, as well as of Reynolds and Moorby. The discussion on the comparative value of the experimenter's results and the remarks on the specific heat of water will be most useful to research students. The appendix contains an interesting letter from the late Prof. Rowlands on the subject of the thermal unit, and also a description of two laboratory methods for the determination of the mechanical equivalent. We can thoroughly recommend the book to teachers and students, as it is written by a high authority who treats his subject in a clear and concise style.

Physical Determinations. By W. R. Kelsey, B.Sc. (Lond.) 310 pp. (Arnold.) 4*s.* 6*d.*—The author states in his preface that the large number of experiments described will enable the teacher to map out his own course of instruction, and that the book is really intended for use in technical schools, and for students preparing for the Intermediate and Final B.Sc. examinations of London University. It is evidently assumed that the student has a sound preliminary knowledge of physics and mathematics. The book contains descriptions of 56 experiments in general physical measurements, 36 in heat, 55 in magnetism and electricity, 23 in light, and 12 in sound, and it will certainly be found very useful in well-equipped laboratories, but many of the experiments are too elaborate for those in which the available apparatus is limited to elementary types. For this reason, students preparing for the Intermediate B.Sc. examination could find a simpler text-book more suitable for their purpose. Many of the experiments are distinctly novel, more especially those on the surface tension of liquids. The graphic experiments on Fourier's Theorem would only appeal to students having a special knowledge of pure mathematics. The description of Bunsen's Ice-calorimeter would suggest that the experiment is much simpler than it really is. It is scarcely an exaggeration to say that there are few more time-absorbing experiments in the whole range of experimental physics. Should not "freezing-mixture" (line 2, p. 121) read "pure ice"? A table of physical constants is inserted at the end of the volume. Mr. Kelsey's book is certainly a useful addition to our literature on experimental physics.

Chemical Lecture Experiments. By Francis Gano Benedict, Ph.D. xiii. + 436 pp. (The Macmillan Company.) 8*s.* 6*d.* net.—The majority of teachers of chemistry attach great importance to the value of effective lecture experiments in their lessons in this subject. While most of them have had an exhaustive training in laboratory work, which in nearly all colleges consists chiefly of analytical investigations, comparatively few of them have had the opportunity, before being called upon to lecture to classes of their own, of practising the art of arranging striking and instructive experiments for the lecture table. Until two or three years ago teachers had to learn from the experiments they saw their professors perform in the college lecture-theatre, and afterwards (and chiefly) through their own failures, the best way of fitting up experiments which would impress and educate their students. The book before us belongs to a growing library of helpful volumes intended to act as guides to teachers beginning a career as lecturers in experimental science. On this side of the water Mr. Newth's collection of similar experiments is the best known, and we notice that Dr. Benedict expresses his indebtedness to it among others. But in this work of demonstrating the principles of science the opinion of the wise man is particularly true, "In the multitude of counsellors there is safety;" and teachers of chemistry will admit that this is a quality which cannot be despised in the lecture experiment. For this reason alone we are justified in calling the favourable attention of teachers of chemistry to this well-arranged set of demonstrations. Many of the devices will be found ingenious and new.

Domestic Economy in Theory and Practice. By Marion G. Bidder and Florence Baddeley. x. + 348 pp. (Cambridge University Press.) 4*s.* 6*d.*—This text-book for teachers and students in training to become teachers of domestic economy is the latest addition to the Cambridge series for training colleges. It consists of two parts; the first deals with the theoretical aspects of the subject, the second with its practice and the methods in which it should be taught. A careful examination of the volume shows that the authors must have presupposed a knowledge of elementary physics and chemistry on the part of the reader, for, even from the first chapter, chemical names, references to physical laws, and technical expressions are abundant. Remembering, however, that the book is intended for girls who have left school and propose soon to become teachers, this does not matter much, as they will have been introduced to scientific terminology at school, but we are afraid the "general public," to whom reference is made in a prefatory note, will be considerably handicapped. The writers seem to be competent guides in their subject and they write in a clear and attractive manner. There is occasionally a want of strict accuracy in the chemistry of the volume. For instance, "of the inorganic substances in solution (in water) perhaps the most important are the salts of calcium, that is lime." It is said of nitrous oxide that "it is not a common impurity in air." We suppose not, but does it ever occur? Or, again, on p. 50, "the second is a salt of lead, generally the oxide combined with water (that is, the hydrate)." But these are merely slips which can be put right in the next edition. Another point of greater importance arises out of the "notes of lessons" making up the last chapter. There is far too much information of a technical kind merely *told* to the pupil. Unwillingly the recollection of "Mangnall's Questions" obtrudes itself. Here is a small part of the first of four consecutive lessons on ventilation—

Of what does air consist?

Ordinary air consists of:—

Nitrogen, 79 parts,
Oxygen, 21 ,,
Faint trace carbonic acid gas
} 100 parts.

Which of these gases is essential to life? And so on.

What is the use of telling children such details? "Nitrogen," "oxygen," "carbonic-acid gas," are words which convey no meaning to children, nor to adults who have not learnt their properties by experiment, but we find no indication of any experiments which are to be performed to substantiate this statement of the composition of the air, nor to give an idea of what nitrogen and oxygen are. But there are more parts of the book calling for praise than there are weaknesses. We hope the strong condemnation of the filthy habit of wearing long trailing skirts in the streets, which is contained in the chapter on clothing, will succeed in abolishing a revolting and pernicious custom.

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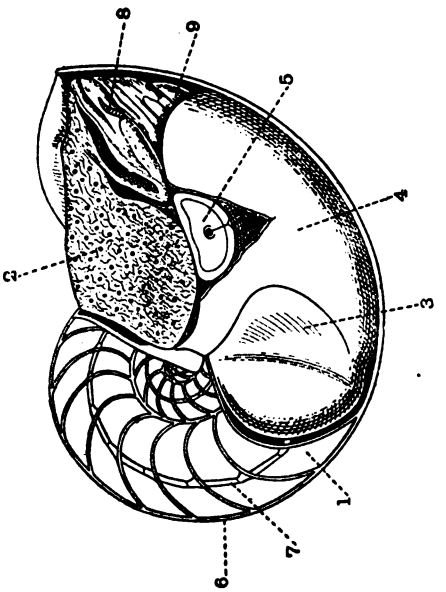
Zoology: an Elementary Text-book. By A. E. Shipley and E. W. MacBride. xxi. + 632 pp., 349 Figs. (University Press, Cambridge.) 10*s.* 6*d.*—Mr. Shipley, of Cambridge, and Professor MacBride, of Montreal, have united their strength as experienced zoological investigators and teachers to produce "an elementary treatise on Zoology which could readily be understood by a student who had no previous knowledge of the subject," and we think that they should be congratulated on their achievement. Technicalities and difficulties are tackled as they occur, and the student who follows the progressive method of the volume will reap his reward. The study of structure is throughout in the foreground, but the authors have endeavoured to expound this structure "as the outcome of function and habit," and "to make it clear that the ultimate end of the science is the discovery of the laws underlying and binding



Side view of *Nautilus pompilius.*
(From Shipley and Macbride's "Zoology."

together the facts." The book is free from the bias of any particular examination syllabus, and the authors show an experienced sense of proportion in the space they allot to the various groups. We fail to see the advantage of placing several phyla of invertebrate animals after the discussion of vertebrates; we think the introduction too terse and elliptical for the ordinary student; we find the portion dealing with the vertebrates somewhat disproportionately difficult and "dry"; but our chief complaint is that in this elementary text-book there is not *more* about the actual life of the animals. As a thoroughly trustworthy and instructive text-book for serious students, the work can be strongly recommended. Its value is enhanced by the large number of excellent illustrations, many of which are delightfully fresh.

A Text-book of Elementary Botany. By Charlotte L. Laurie. ix. + 142 pp. (Allman & Son.)—This little work is primarily intended for the use of students preparing for the Junior Oxford and Cambridge Examinations, and to serve the requirements of beginners in botany. The work is divided into three parts, the first of which chiefly treats of morphology, and the last two of classification and physiology respectively. Excepting a few points which require a certain amount of improvement, we are of the opinion that the book is very good indeed, and doubtless will prove of value. The illustrations, for which Miss W. L. Boys-Smith is responsible, uniformly are excellent; and in brief the "get-up" of the volume leaves nothing to be desired.

First Stage Building Construction. By Brysson Cunningham, B.E. viii.+240 pp. (W. B. Clive.) 2*s.*—The author states in the preface that he has been strictly guided by the requirements of the Board of Education, but it would seem that he has not examined the latest "Directory." The letterpress of the book is, with a few exceptions, clear and readily intelligible to the elementary student. We doubt, however, whether the average reader will understand the meaning of "the key" in plastering from the casual reference on p. 137. The statement that the cross section of an ordinary tree "consists of a number of concentric rings produced annually" (p. 75) is surely liable to misconception. "Plan" (two lines from the bottom of p. 92) is evidently a misprint for "elevation." The illustrations—418 in number—are well drawn and reproduced, and supplement the text in a very valuable degree. They do not display much originality; but this would, perhaps, be too much to expect in a book the scope of which has been so well covered in former text-books. One of the most valuable features of the book is the simple explanations of the theoretical principles underlying certain practical methods. These cannot fail to arouse the student's interest, and will lay a good foundation for more advanced work. The book may be confidently recommended.

Miscellaneous.

The Teacher's Certificate Guide. 3*d.* net. *The King's Scholarship Guide.* 6*d.* net. By E. E. Denney and P. Lyddon-Roberts. *Guides to the A.C.P., L.C.P., F.C.P. Examinations.* 6*d.* net each. By A. E. Ikin, B.Sc. (Normal Correspondence College Press.)—These practical little handbooks by experienced teachers contain just the information required by students in country districts who are anxious to succeed in those examinations of the Board of Education and the College of Preceptors which are specially intended for teachers. To all who desire to know what to do to secure the Teacher's Diploma of the College of Preceptors—and in view of the Register of Teachers which is to be prepared by the Board of Education there is an increasing number—Mr. Ikin's guides will be especially useful. Not only do the brochures contain lists of suitable textbooks in all necessary subjects, but also specimens of recent questions set in the examinations for the different certificates.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Teaching of Mathematics.

PROFESSOR PERRY'S paper, read at Glasgow, on the Teaching of Mathematics, must rouse mixed feelings. However good our methods may be, they are not sacred, and I, for one, would willingly accept improvements; but it seems necessary to have a detailed scheme or syllabus before one can estimate the value of the proposed reform, set forth as it is in rather general terms. "Put him (the pupil) in command of all existing knowledge as quickly as possible." Very remarkable advice. I think we may claim that we try to carry out the spirit of the advice contained in the words "as quickly as possible," though we may not possess all existing knowledge. It is very wholesome to skip early difficulties, and come back to them when the mind is more trained. For instance, in Geometry, if the proof of an

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early proposition presents difficulties, let the result be simply assumed for a time. This is, I imagine, the plan of many teachers. But I do not know what is to be gained by Prof. Perry's suggestion, "Where would be the harm in letting him assume the 6th book of Euclid to be axiomatic?" Where would be the use? Assuming the truth of proposition 1 (to avoid a discussion of incommensurables), a boy can in a short time learn the most important and useful propositions of the 6th book, know more about them and remember them more easily than if he treated them all as axioms.

It appears from hints in the paper that there is, or ought to be, some method of beginning the Infinitesimal Calculus without much preliminary training in the elements of Algebra and Geometry. It would be interesting to hear details of this.

Mathematical masters are supposed to teach with a view to examinations. Some of us may have loftier aims; but the zeal of the pupil is the main thing; and one may be quite sure that a boy will put very little enthusiasm into a subject which is taught in a manner at variance with the tests by which he will be tried. Therefore, I say, if an attack is to be made on the system, however effective the weapons of attack may be, do not misdirect them at the head of the schoolmaster, but use them all against the examining bodies. One missile might be reserved for the legislators, the merchants and the engineers, who continue to employ tables, measures and scales, which are not decimal, and who thus waste the time of children over questions about yards and poles, to say nothing of the loss to the country from a business point of view.

A. A. BOURNE.

Cheltenham,

Surface of a Sphere.

THE first great difficulty which confronts the teacher of Practical Physics when conducting his pupils through the early stages of the subject is, perhaps, the experimental verification of the formula, $4\pi r^2$, for the superficial area of a sphere. The following simple experiment which furnishes an indirect proof of the formula may therefore be of interest. A cylinder and sphere of exactly equal diameter are procured, and a portion of the cylinder equal in length to its diameter is marked off by means of a very thin elastic band placed evenly all round. We may evidently consider the part marked off as the circumscribing cylinder of the sphere. A pin is now stuck into the sphere, the two solids are carefully weighed and the weights noted. This done, the curved surface of the "marked off" portion of the cylinder is smeared with colza oil *until just glossy*, the oil being very carefully applied with a small piece of cloth, or with the finger (not a brush). The sphere is then held by the pin and carefully oiled in a similar manner. The increase of weight due to the oiling will be found to be in the two cases very approximately, if not exactly, the same.

The following are independent results obtained by three pupils, working with different balances, and using slightly different pairs of solids :—

(*a*) Weight of oil which covered surface of sphere ... ... = ·035 grms.
Weight of oil which covered curved surface of cylinder... ... ... = ·035 ,,
(*b*) Weight of oil on sphere ... . = ·053 ,,
,, ,, on cylinder ... ... = ·052 ,,
(*c*) Weight of oil on sphere ... ... = ·03 ,,
,, ,, on cylinder ... ... = ·03 ,,

Using an accurate chemical balance, the following result was obtained :—

Weight of oil on sphere ... ... = ·0526 grms.
,, ,, on cylinder ... ... = ·0522 ,,

The same amount of oil being required in each case, we conclude that the area of the surface of a sphere is equal to that of the curved surface of its circumscribing cylinder. By development, the latter is easily shown to be: circumference of base × height $= 2\pi r \times 2r = 4\pi r^2$ (where r is the radius of cylinder and sphere). Hence superficial area of sphere $= 4\pi r^2$.

In the above experiment, no account is taken of the fact that the "sheet" of oil is bounded in the one case by concentric spherical surfaces of very slightly different dimensions, and in the other by equal cylindrical surfaces.

B. B.

Order of Cases in Latin Declensions.

THERE are many improvements in the modern educational books and methods of teaching; but I venture to think that the old order of cases in the declension of Latin nouns was much better than the modern, inasmuch as new pupils do not grasp the increase of the genitive in the third declension. When the genitive case came next to the nominative, it was easy to explain that the increase of syllables continued throughout the declension, and, indeed, it followed as a matter of course, and was no difficulty. Now that the accusative is put before the genitive in the declension of nouns, and yet the genitive continues to hold its own in all vocabularies, the nominative and genitive of every noun being given, I think it is more difficult for a child to grasp the importance and use of the genitive and its influence throughout the declension. The modern method is a more parrot-like way of learning. It is always easy to explain that nominative, vocative and accusative are alike in neuter nouns and all intelligent pupils grasp the fact at once and remember it, no matter where the accusative is placed in the declension. In teaching little boys I find a difficulty which never occurred to myself, who learnt under the old method, and, indeed, was impossible. I write hoping to call forth the experience of other teachers of juniors.

M. G. MARTIN.

ove, Brighton.

Latin as a Mental Training.

THAT a correspondence carried on through the medium of a monthly magazine should drag is, perhaps, but natural. Nevertheless, I was sorry to see from your October issue that Mr. Rouse's recent letter under the above heading had been left unanswered. For, ancient as the topic may be, the question as originally raised by Mr. Higgs is undoubtedly one of importance.

As Mr. Rouse stands ready to roll the rash heretic in the dust who shall venture to maintain that Latin is "of no use as a mental training," I hasten to declare myself no heretic, but a true believer.

But, when one has admitted to the full the possibilities of Latin as an instrument for the development of the mind, what then? Mr. Higgs then proceeds to advocate, for schoolboys in general, *less* Latin, more French and German. I wish to place myself under Mr. Higgs' banner. To Mr. Rouse I shall immediately appear as a decrier of Latin. But is Mr. Rouse not a little hasty in his judgment? Is he not missing, or at any rate ignoring, the point involved? Reasoning from analogy, he reminds us that by dumb-bells, the parallel bar, &c., men "make their bodies healthy and strong." But, surely, he will recognise that, while *one* man may owe his robustness to boxing and the parallel bar, *another*, equally healthy and quite as strong, may be indebted for his vigour to running and dumb-bell exercises. Latin has proved a very efficient instrument for the training of many minds; but that does not constitute it the sole instrument possible for the training of all minds. As there are alternatives to the parallel bar, so are there alternatives to Latin.

To desire in general a freer scope for the effective adoption of

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these alternatives is not to decry Latin. Mr. Rouse mistakes. The complaint implied is not a complaint against Latin as a possible school subject. It is one, rather, against the attitude and actions of those who placidly assume that the dead languages alone are fit instruments of mental training, and who deem it as an axiom that *modern* languages are but a passable makeshift for the mentally backward, of use for the mere quotation of "prices current" and the production of "commercial letters."

Under our present systemless system of secondary education, to make complaint of so time-honoured an attitude of mind is, of course, to tilt at air. Nevertheless, there are at least three good reasons, I think, why the complaint should be from time to time remade.

Firstly, the attitude is an unjustifiable one. It is due, in part, to the gratuitous assumption that there is in the ancient languages some specific educational value that is altogether wanting in the modern; and, in part, to a persistent overlooking of the ultimate explanation of that success in the training of mind frequently obtained through the classics. This ultimate explanation is forthcoming, if we but consider the conditions that have produced success. And, surely, these are—a practical monopoly of the time-table, a magnetic teacher, and a responsive pupil: in other words, absorption in the course of study; a teacher of well-stored mind, imbued with enthusiasm for his authors and the broad ranges of thought for which they furnish matter and scope; and a pupil who catches the influence of that enthusiasm and that breadth. It is the spirit caught from the teaching, and not the mere linguistic acquisitions, that makes for genuine mental training. The teacher of the language, and not the language taught, explains the success achieved.

Secondly, it is an undiscriminating attitude of mind. It takes little account of differing individual gifts or of unequal and varying school conditions. It makes no distinction between those who promise to thrive under the training and those who do not; it offers the same course to all, and is little wont to consider the fate of those who, despite the time sacrificed, will never travel far from the starting point. Although the Recording Angel himself must long ere this have lost count of the numbers of those whose mental training has been arrested, rather than advanced, by their bondage to the system, it complacently favours the perpetuation of that system. It is theoretic and dogmatic, and, in its more conservative phase, fails to appreciate any but the one type of trained mind.

Thirdly, it is an obstructive attitude. It undervalues modern progress in educational science. It surrenders grudgingly its ancient prerogatives, and is most loath to recognise efficient alternatives to its own favoured system. When, overborne by circumstances, it partly yields to outside pressure, it too often drops into a state of uninformed indecision, offering half-hearted compromises and invertebrate curricula that constitute no reform and allow adequate opportunity neither to the old nor to the new. It seems almost to prefer that the many go uneducated, if they cannot get education on the lines it favours. It holds too undivided sway in our secondary schools; and, speaking generally, its exponents are not versatile enough to carry through those reforms of "classification" and alternative curricula that are so urgently needed.

To conclude, Latin may be of excellent use as a mental training: but—the parallel bar for some; dumb-bells, however, for others!

A. STALLWORTHY.

Royal Grammar School,
Newcastle-on-Tyne.

ALL teachers admit the value of Latin as a mental training, but are there not other subjects that are as good in that respect, and yet that are of more visible use to boys after their school life is done? If only one hour a day is to be given to Latin, is it likely that enough progress will be made for the boy to take any real interest or pleasure in it?

Many boys keep up their French or German without any idea of making commercial use of either. Do any keep up their Latin? After all, we can teach a boy very little during his school days, but if we can implant in him a desire to know more, his time has not been wasted.

Many boys wish to enter professions between sixteen and twenty who have to spend valuable years in working up a minimum of English, Mathematics and Modern Languages. They are generally given a fair grounding of these at preparatory schools, but at public schools they appear to spend their time in forgetting what little they have learnt of these subjects and in acquiring a distaste for the classics.

DE V. PAYEN-PAYNE.

Schools for Co-Education.

WILL you allow me space to ask your readers to be kind enough to send me the names and addresses of any co-education schools in England of which they know or in which they are working?

ALICE WOODS.

Maria Grey Training College,
Salusbury Road, Brondesbury, N.W.

[A description of the work of Keswick School, in which co-education is carried on, appears in this issue.—EDS.]

An Addendum.

MAY I add a short footnote to my last month's article on "European History, 1095-1254"? I cut out a reference to Dr. Gross's translation of M. Lavisse's "Vue Générale," because I believed it to be out of print. But Messrs. Longmans have since informed me that it is still on sale at their New York establishment (53 and 55, Fifth Avenue). The price is 1 dol. 25 cents, which means, I suppose, that a P.O. for 5s. will secure a copy by return. The translation, which is admirably executed, is somewhat more conveniently arranged than the original; and the fact that a scholar of such eminence as Dr. Gross thought the book worth translating is a more eloquent and convincing proof of its value than any words of mine could be.

C. S. FEARENSIDE.

Cambridge.

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The School World

A Monthly Magazine of Educational Work and Progress.

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SOME EXPERIMENTS IN THE TEACHING OF ENGLISH LITERATURE.

By. C. L. THOMSON.
Examiner in English Literature to the Central Welsh Board.

ALTHOUGH English literature is receiving more attention at the present time than it has done for many years, it is still, unfortunately, one of the worst-taught subjects in the curriculum of our schools. The reason for this neglect lies in the fact that so many people are inclined to regard education from a utilitarian point of view, and to give prominence to those subjects which are plainly remunerative in the after career of a pupil. Skilled teaching is therefore considered essential in such subjects as natural science, mathematics, and languages, while the literature lesson is often left to that member of the staff who has most leisure, with little regard to his especial qualifications. Yet literature, of all subjects, requires wide reading and general culture on the part of the teacher, besides a certain share of critical power and a large amount of enthusiasm.

It must be confessed that the regulations of many examining bodies have been a great obstacle in the way of the intelligent teaching of literature. By these regulations a form taking English as one of the subjects for examination is often condemned to spend a whole year in the study of a single book. And because it is very difficult to frame questions on English literature which do not involve a great deal of labour to the examiner, it has been the custom to prepare for papers dealing rather with obscure words and allusions than with the thought and subject matter of the book. This is the type of paper usually set, and it is small wonder that the teacher spends an infinite amount of trouble in drilling his pupils in these matters rather than in drawing from them their conception of what the author means, and their own opinion of the various characters involved in the action. The pupil naturally regards these notes and etymologies with disgust; he has not reached an age at which he can take a scholarly pleasure in such details, and by the end of the year he has come to look upon his school edition of "The Tempest" or "Julius Cæsar" with a loathing that will probably prevent him from ever regarding Shakespeare as a source of delight. I am speaking, of course, of the average pupil; there are some boys and girls whose literary taste is so keen that it will triumph over these discouragements, but they are the exceptions.

But in some schools a different method is followed, a method which was once very common in the higher forms of girls' schools, but which is happily on the wane. This is the study of the history of literature from a primer or from notes given by the teacher. The primer or notes give the dates of the author's birth and death and of his principal works, briefly summarise his chief characteristics, and supply a cursory survey of the chief literary movements. All this is learnt by rote, and reproduced in examination papers in the exact words of the book or teacher. The pupils take for gospel criticisms on authors they have never read, and no single opportunity is given for them to exercise their own judgment or to go through any intellectual process whatever beyond that of learning by heart. I do not in any way condemn the literature primers; many of them are excellent; but I would urge that they should never be used except in conjunction with the literature itself—that is, that no pupil should accept even Dr. Stopford Brooke's admirable verdict on Wordsworth without knowing something of Wordsworth's poems at first hand.

Then, it may be asked, how can we steer clear between the minute study of a single book and the encyclopædic method of the primer? How is it possible to give children an adequate knowledge of so vast a subject in the time allotted to us? Must it not necessarily be very limited or very superficial?

If the subject is properly treated from the beginning I do not think that either of these alternatives is inevitable. But to get good results we must give literature its proper place in the time-table from the lowest form in the school, and follow a definite plan in teaching it throughout the child's school life.

In the first place, a great deal may be achieved through the reader. Not nearly enough attention has been given to this matter. There is no reason why every reading book put into the hands of a child should not be attractive in appearance and subject matter and written in a graceful and literary style. But the chief aims of most of the existing

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readers seem to be, first, to provide something to read aloud—no matter how baldly and poorly written so long as the length of the words introduced is carefully graded; and, secondly, to convey all kinds of miscellaneous information by the way. The last aim is perhaps defensible in readers intended for use in elementary schools; when the child's school life is short and when time has to be economised, it may be pardonable to introduce scraps of knowledge in this way; but even in these books a higher literary ideal might be kept in view. And, unfortunately, these readers often find their way into secondary schools, where there is no such excuse for their use, and the reading lesson, instead of being a delight and joy, becomes a time of unutterable tedium to teacher and children. Good readers undoubtedly exist; but educational booksellers naturally stock those most widely used in elementary schools, and the harassed teacher, going to choose one for the new term's work, often has no chance of seeing those of a better class, and finally settles on the least poor of those displayed on the counter.

But the best direct way of teaching literature in lower forms is by telling stories from standard sources; and if this is done on a systematic plan a fairly clear idea of the progress of our literature can be given. The way may be prepared by telling tales from various mythologies; in the first form the stories of the Odyssey and the Æneid and the Norse myths are received with acclamation. If homework is given at this stage it may take the form of an outline picture on the subject of the lesson to be painted by the children, or they may be allowed to draw an original picture for themselves.

In Forms II. and III. the regular study of English literature can begin, and the two years spent here may be covered in the following way:—

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First term.—The story of Beowulf, and stories from Chaucer.

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Third term.—Stories from Shakespeare.

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First term.—Story of "Comus," and story of "The Pilgrim's Progress."

Second term.—Stories from "Gulliver's Travels," "Sir Roger de Coverley," and stories from Scott.

Third term.—Stories from Byron, Tennyson, Browning, and other nineteenth-century poets.

So far as is practicable, through all these lessons, the class should be brought as near the source of the story as possible. Thus, in telling the stories of Shakespeare's plays, one may give the easier dialogues and songs to be learned by heart, and towards the end of the second year's work this may be done much more extensively in connection with Scott, Byron, and Tennyson. After the narration of each story the name of the author should be given, with dates and a few particulars of his career. The names of the authors, together with those of their principal works and their dates, should be learnt by heart, as they will form a kind of framework into which later details may be fitted.

In the fourth form the actual study of literature may begin. And here a word may be said about the editions chosen for the children's use. It is best to avoid those with many notes, and to try to get well printed, strongly, yet prettily bound copies, which have as little of a "schooley" look as possible; so that the pupils may be attracted by their appearance and learn to regard them with too much respect to scribble on the pages or to ink the binding. It is a good plan to encourage the children to form little libraries of their own, of which these school books may be regarded as the nucleus, and to look upon each new poet studied as a welcome addition to their store. Editions of standard authors containing the text only are so cheap and good that it seems a pity to buy dull-looking books the bulk of which is chiefly made up of notes. If the teacher requires an annotated edition for private use, well and good, but unless a class is reading for an examination (and even in this case they should not be essential) notes are a useless encumbrance, which make the book both dearer and heavier.

It is impossible now to keep to chronological order, because our earliest literature is too difficult for children to study. One must take simple poems or prose pieces by such authors as Browning, Tennyson, Byron, Longfellow, Scott, Milton, Grey, Cowper, Campbell, Addison, Goldsmith, Thackeray, or Swift, and read them with the class. It is a good plan to take one author each term, so that the class may be thoroughly impressed with his characteristics as distinct from those of other writers, and learn to compare and contrast various styles for themselves.

As to method of study, the following plan has been found successful. The teacher reads the passage aloud first; then the class reads the same passage by turns, and after each pupil has read, the teacher puts questions on the subject matter until the meaning has been thoroughly grasped. Attention is then drawn to the artistic devices used by the writer, and the pupils are asked to decide why one word or expression is preferable to another of identical meaning, or why such and such an epithet or simile is particularly appropriate to the word with which it is coupled. The construction of the paragraph or verse, the suitability of certain metres to the theme, and the use of alliteration are other points to be dwelt on, and with a little guidance the pupils will soon begin to notice these things for themselves and become quite eager in pointing them out, while as they grow older they will find additional pleasure in studying the structure of the work as a whole, and in following its evolution. It is of course important to avoid telling the class too much; by careful questioning a great deal may be got out of them and they will learn to exercise their own power of judgment and discrimination.

Such work may occupy the middle forms of the

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school, and as time goes on the simpler plays of Shakespeare may be introduced, to be read in parts and to be studied, not from the point of view of notes and disputed readings, but from that of subject-matter and meaning. Any sympathetic teacher can tell from the tone of a pupil's voice whether he understands what he is reading, and it is necessary to explain the meaning only of such words as obscure the sense of the passage. Very often a passage that appears incomprehensible at first sight will be cleared up by the help of a few skilful questions, and the sense of victory obtained by this means stimulates the pupil to go on and make fresh efforts. I know that some teachers dislike paraphrase, but properly used it is a valuable test of the understanding of a passage.

By the time the sixth form is reached a great deal of literature will have been read in this way, and a valuable training in literary discrimination will have been given. The extremes of over concentration and superficiality will have been avoided, a considerable knowledge of English prose and poetry will have been gained, and the desire for further independent study will have been implanted in not a few of the pupils.

THE FRENCH COURSE FOR THE IRISH INTERMEDIATE EXAMINATIONS, 1902.

By A. T. BAKER, M.A., Ph.D.
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Middle and Senior Grades.

THE teacher of modern languages in Ireland will welcome the new regulations abolishing set books in the examinations of the middle and senior grades of the Irish Intermediate Education Board. The adoption of unseen passages as tests gives him great scope, both in the choice of authors to be read and in the methods he may pursue in teaching. In an examination where the prescribed text occupies the greater part of the paper, the pupil is apt to rely on his recollection of the matter as a whole for a translation of some particular passage, rather than on his knowledge of the language. If the tests, on the other hand, are to consist entirely of unprepared passages, the pupil will endeavour to make every word and expression he meets in his reading his very own.

TEXTS.—The authors given as "standards for style and character of the passages" in the middle grade are Souvestre and Coppée. The teacher will probably decide to choose texts which may be easily worked through in one term. He may select for a first term some of the charming *récits* from the collection of Souvestre, "Au coin du feu" (Hachette, 1s. 6d.), and then in a following term some episode from Dumas such as "L'Évasion du duc de Beaufort," or "L'Œillet rouge" (Rivington, 10d. each). An author read with pleasure by young people is the Swiss Töppfer. An edition of the "Voyages en Zig-zag," written especially for his pupils, is published by Blackie (1s. or *1s. 6d.). Two short stories from the same writer's "Nouvelles genevoises" are published by Rivington ("Le Lac de Gers," "Le Col d'Anterne," 10d.). Short works by Mérimée are "Tamango" (Blackie, *1s.), and "Le Coup de Pistolet" (Blackie, 1s.). There is an edition of "Contes choisis" of Coppée in Mr. Siepmann's series (Macmillan, *2s. 6d.), while the same author's "Luthier de Crémone" and "Trésor" are published by Hachette (9d. each). Rather more difficult texts are the "Contes du Lundi" of Alphonse Daudet, which may be had in 8 parts at 1d. each (Paris; Fayard). The first three "fascicules" contain "La dernière Classe"; "L'Enfant Espion"; "La Partie de Billard"; "Le Siège de Berlin"; "La Vision du Juge de Colmar," &c.; and the same author's "Lettres de mon Moulin" (in 6 parts at 1d. each), contain the charming stories "Les Vieux," "La Mule du Pape," "Le Phare des Sanguinaires," "La Chèvre de M. Seguin," "L'Elixir du R. P. Gaucher."

Many teachers have the excellent practice of setting poems to be learnt by heart. A number suitable for this purpose are to be found in the "Songs of Béranger" (Blackie, *1s.), "French Poetry for the Young" (Macmillan, 1s. 6d.), and in Rennard's "French Unseens" (Blackie, 3d.).

The characteristic authors for the senior grade are Erckmann-Chatrian and Sandeau. Of the first authors' works we have many school editions: "Le Blocus" (Hachette, 2s., vocab. 6d.), "Histoire d'un Conscrit de 1813" (Hachette, 3s., vocab. 6d.), "Waterloo" (Pitt Press, 3s.), "La Guerre" (Pitt Press, 3s.), "Madame Thérèse" (Hachette, 3s., vocab. 6d.), or selections from the "Conscrit," published by Velhagen and Klasing,[1] Leipzig (B edition, 1s.); some chapters from "L'Histoire d'un Paysan" are also published by Rivington (10d.). From the excellent series edited by Mr. Siepmann (Macmillan) might be chosen: Daudet (A.), "Tartarin de Tarascon"; Theuriet, "L'Abbé Daniel"; Sandeau, "Sacs et Parchemins." Books dealing with events in French history, suitable for schools, are Lamartine, "Scènes de la Révolution française" (from the "Histoire des Girondins") published by Isbister (1s.), or "Trafalgar" (Hachette, *10d.); Sarcey, "Le Siège de Paris" (ed. Kirkman, Blackie, *1s. 6d.; ed. Spiers, Heath, 1s. 6d.). More difficult books are St. Victor, "Cour d'Espagne sous Charles II." and "Selections from Taine" (Blackie, 1s. each).

Plays to be recommended are: Labiche et Jolly, "La Grammaire"; Labiche et Martin, "Le Voyage de M. Perrichon"; Augier et Sandeau, "Le Gendre de M. Poirier"; and (more difficult) Sandeau, "Mdlle. de la Seiglière"

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* An asterisk before the price of a book implies that a French-English vocabulary is added.

[1] This firm publishes most of its very valuable editions in two forms: *A* with footnotes; *B* with notes in a detachable booklet. (The notes are of course in German.)

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(also Macmillan, 1s. 6d.); Coppée, "Pour la Couronne" (Hachette, 9d. each).

In case the teacher should decide to use an anthology, he will need to see that it is not too "scrappy," and that the passages read are long enough to leave some definite impression on the pupil's mind. A valuable book of this nature is Berthon's "Specimens of Modern French Prose" (Macmillan, 1s. 6d.); it contains ten passages from standard authors of some three to eight hundred lines each. A similar compilation is Lazare's "Petits Chefs-d'œuvre contemporains," containing short attractive tales by popular writers (Claretie, Coppée, Maupassant, &c.—Hachette, 1s. 6d.). Passages suitable for monthly test papers may be found in Du Pontet's "Morceaux Choisis" (Arnold, 1s. 6d.), Lazare's "Half-hours with Modern French Writers" (Hachette, 1s. 6d. or *2s.), or for honours pupils in Barlet and Masom's "Advanced French Reader" (U.C.C. Press, 3s. 6d.). Two scholarly collections of French poetry, with introductions treating of metre, are Spencer's "Primer of French Verse" (Camb. Univ. Press, 3s.), Berthon's "Specimens of Modern French Verse" (Macmillan, 2s. 6d.).

Method.—The teacher, once freed from the trammels of set books, will be at liberty to choose his method. Modern languages, taught on the same lines as the classics, have for generations occupied a very secondary place in school curricula. Pressure from without and the work of many an earnest teacher from within have produced during the last decade many important changes. It is generally admitted that our object in learning a modern language is, in the first place, that we may understand, speak and write it, a result impossible by the classical method in which the grammar was made the centre of instruction. Recent developments in modern-language teaching show a tendency to supplying first an exact knowledge of the sounds and then of the written forms of the language. A radical change of this kind must take place first in the lowest classes, and it is impossible to adapt at once such revolutionary theories to an advanced class. Methods by which the child is taught to associate the object directly with the foreign word are finding every year a greater number of adherents. In the last three years the number of books published on the lines of the "neuere Richtung" is considerable. We have one series of school books setting forth the new method in its entirety,[1] and others partly so.[2] A series of articles on the early teaching of French from the pen of Professor Rippmann have appeared in The School World.[3] Two valuable papers by Mr. W. Campbell Brown, entitled, "How far is the *Neuere Richtung* possible in English Schools," have been published in the *Modern Language Quarterly*,[4] the organ of the Modern Language Association.

Phonetics.—The teacher using such reform methods will derive much help from the modern science of phonetics. A careful account of the sounds of English, French and German is to be found in the "Elements of Phonetics,"[1] adapted for English readers from Prof. Viëtor's "Kleine Phonetik," by Prof. Rippmann. Every teacher of modern languages would do well to become a member of the *Association phonétique internationale*,[2] whose monthly journal, *Le Maître phonétique*, will enable him to keep in touch with the latest results of the science applied to teaching. The special characteristics of northern speech are carefully studied in Dr. Lloyd's handbook of Northern English.[3]

The New Method in Class.—The following is an attempt to show how a short story may be treated in class:—

Le duc d'Ossone, fameux par ses jugements et par ses plaisantes reparties, étant vice-roi de Naples, alla un jour sur les galères d'Espagne alors que c'était grande fête, à dessein d'user du droit qu'il avait d'en délivrer quelque forçat. Il en interrogea plusieurs et leur demanda pourquoi ils étaient là. Tous ceux à qui il s'adressa s'excusèrent sur divers prétextes, et tâchèrent de lui faire croire qu'ils étaient innocents; il n'y eut qu'un qui lui avoua naïvement tous les crimes qu'il avait commis et avoua qu'il avait mérité une plus grande punition que celle qu'il souffrait. Qu'on chasse ce méchant homme, dit le duc, en lui faisant donner la liberté, de peur qu'il ne pervertisse tous ces gens de bien que voilà, récompensant ainsi plaisamment la sincérité de ce galérien, et se moquant de la mauvaise foi des autres.[4]

The teacher will first read the piece through carefully; he will then read, or let one of his best scholars read, from the beginning to . . . *forçat*; he will then point out the principal sentence, telling his class the approximate date of the vice-royalty of the Duke of Ossuna, and sketch the history of the kingdom of the "Two Sicilies." He may then ask questions such as "*Par quelles qualités le duc était-il fameux? Où alla-t-il un jour? Qu'est-ce que le royaume de Naples* (insisting on a correct pronunciation of the word); *Pourquoi le vice-roi alla-t-il sur les galères?*" &c., &c. The next sentence may then be read, and by such a question as *A qui demanda-t-il . . .?* the construction with verbs like *demander* explained. A phrase like *tâchèrent de lui faire croire* may be used to point out the use of *faire* with an infinitive. When the whole story has thus been worked through, a pupil (or pupils) may be asked to give it in his own words, or one or more may be set to write the story from memory on the blackboard (placed in such a position that the rest of the class cannot see), the others writing their versions on pieces of rough paper; the blackboard versions may then be corrected or amplified by the whole class. The teacher will then dictate certain main ideas, and

1 Dent's "First and Second French Books" followed by "Une joyeuse Nichée," and Three Plays from Souvestre. (Dent.) 1s. 6d. each.
2 "First French Book" (Mackay & Curtis.) (Whitaker.) 2s. 6d.
3 Six Papers, January-June, 1899. (To be had separately.)
4 In numbers for August, 1899, and July, 1900.

1 "Elements of Phonetics," adapted from Viëtor's "Kleine Phonetik" by W. Rippmann. (Dent.) 2s. 6d.
2 The annual subscription for ordinary members in only 3fr. 50 c. including the journal. This amount (2s. 10d.) may be sent for transmission to Paris either to Dr. Lloyd, University College, Liverpool; or to the writer of this article.
3 "Northern English." By R. J. Lloyd. (London: D. Nutt.) 3s.
4 French Weekly Tests. Le François. (Blackie.) 4d.

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the whole will be worked up as composition for home work.

TRANSLATION INTO FRENCH.—Translation forms an important part of the programme for these examinations. The best preparation is doubtless the free composition hinted at in the foregoing paragraph. The choice of a composition book would need to be regulated by the previous work of the class; Macmillan's "Course of French Composition," by Fasnacht (First Course, 2s. 6d.), may, however, be warmly recommended. The pupil may be allowed to have at his side while translating the "Vade-mecum of French Composition" by Lazare (Hachette, 1s.), while the careful "Advanced French Prose Composition" by Duhamel (Rivington, 4s. 6d.) would be found suitable for the more advanced pupils. As to the use of a dictionary, only a French edition should be allowed. That found in all French schools is the "Dictionnaire Complet" of Pierre Larousse (1,404 pp., 2,000 illustrations, price 3 fr. 50 c.).[1] The system of translation modelled on the matter read in class has been carefully worked out in the series edited by Mr. Siepmann.[2]

GRAMMAR.—Questions on grammar will be mainly those "arising out of the passages set"; it would be well, therefore, if the teacher adopt the plan of making an "outline grammar," filling in examples as they occur. The following, which is offered as a "skeleton," may be sufficient for the middle grade, while a book like Clarke and Murray's new "School Grammar of Modern French" (Dent. 3s. 6d. net) would meet the requirements of the seniors.

ABRÉGÉ DE GRAMMAIRE.

Page 1.—Table des matières; 2, 3, substantif, pluriel; 4, adjectif, féminin; 5, adjectif, pluriel; 6, adjectif, comparaison; 7, adjectif, position; 8, 9, verbe, 1 conjugaison [-er]; 10, verbe, 2e conjugaison [-ir] (a) "morte"; 11, 2e conjugaison [-ir] (b) "vivante"; 12, verbe, 3e conjugaison [-oir]; 13, verbe, 4e conjugaison [-re]; 14, 15, pronom; 16, noms de nombre; 17, adverbe; 18, 19, négation; 20, 21, préposition; 22, 23, conjonction; 24, 25, orthographe; 26, choses et autres.

A common exercise-book may be used for the purpose with the above as headings; care must be taken that the pagination is the same for all pupils, and that the even numbers are on the left-hand page.

IDIOMATIC EXPRESSIONS.—Such expressions should be collected from the matter read and placed on pages reserved for the purpose in the above "Abrégé." Colloquial phrases are very carefully arranged in Franke's "Phrases de tous les jours" (Leipzig, 1893).

The teacher might with advantage take the picture of the "Town" from the Hölzel series of pictures (Hachette, about 7s. each), and by means of the "Exercices pour la leçon de conversation française" of Durand et Delanghe (Hachette, 4d.) introduce a large number of every-day expressions. French idioms are carefully explained in de V. Payen-Payne's "French Idioms and Proverbs" (Nutt, 3rd ed., 1900, 3s. 6d.).

HISTORY.—An interesting feature of the programme is the introduction of French history. The teacher could hardly do better than take the little book of Lavisse, "La nouvelle deuxième année d'histoire de France" (Paris, Colin, 1 fr. 50 c.). The name of its author is sufficient guarantee of its accuracy, and it has further the advantage of presenting facts from a French point of view. A short book in English is Joerg's "Outlines of French History" (Swan Sonnenschein, 2s. 6d.). In the higher classes either book might require some amplification of detail, for which the teacher might turn to Grant's "History of the French Monarchy" (Camb. Univ. Press, 2 vols., 9s.), Murray's "Student's History of France" (new edition, 7s. 6d.), or to Lavisse and Rambaud's "Histoire générale du ive. siècle à nos jours" (Paris, Colin, 12 vols., 16 fr. each), volume vi. of which contains the *Siècle de Louis XIV.*[1] Material for recapitulation may be found in the "Mémento de Poche" (Paris, Larousse, 1 fr. 50 c.).

In conclusion, the writer would like to call the attention of teachers to the article of Mr. Siepmann in THE SCHOOL WORLD of March, 1900, on a "Modern-Language Master's Library of French" and to the critical survey of "Books of Reference for Students and Teachers of French" by Dr. Braunholtz (London, Wohlleben).

[1] The popularity of this book is shown by the fact that it has reached its 114th edition.

[2] A teacher's book is provided to these volumes. A similar system has been arranged for Mérimée's "Colomba," by K. S. Kimball: "Exercises Composition." (Isbister). 4d.

THE FORMATION AND WORK OF A SCHOOL NATURAL-HISTORY SOCIETY.

By F. W. HEADLEY, M.A.
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AIMS.—A School Natural-History Society should aim at two things—(1) at enabling those who have a strong bias towards Natural History to pursue their hobby in an enlightened manner; (2) at turning others who have but little inclination that way into naturalists. The former of these two classes generally know how to use their eyes. The second, having been educated almost exclusively by means of books or oral instruction, have very little power of seeing. What power they have must be encouraged by convincing them that there is a great deal to see which they miss, and by getting them to train themselves in observation. Both classes must be encouraged to bring their minds to bear on what they observe. Eyes and active brains are the great desiderata.

DIFFICULTIES.—The difficulties are considerable and, perhaps, increasing. Many boys live in towns or suburbs, and know little more of the country

[1] Voltaire's "Siècle de Louis XIV." may be freely consulted in the Pitt Press edition. Three parts, 2s. 6d. each.

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than that it has generally a green appearance. Though they have been at a private school in the country, games may have filled all their thoughts. At a public school there is little leisure for many of the boys. Work, organised games, drill, gymnastics, leave but a small margin of leisure. Moreover, the honour and glory to be won by athletic prowess eclipse any triumph that can fall to the lot of an ornithologist, entomologist, or botanist. This being the case, at some schools (happily, I believe, fewer than formerly) a butterfly-net is never seen. Public opinion does not tolerate such a thing.

How to get over these difficulties? We must consider what instinct there is to appeal to in a boy's character. He represents an earlier stage of evolution, when men lived by hunting and fighting. His games are mimic battles—war tempered by rules and umpires. Anything that suggests hunting has charms for him, and his love of Natural History, when it exists, is generally to a great extent a form of the love of hunting. The savage pursues the wild animal on which he depends for food; the civilised boy pursues a butterfly. The same spirit goads him on when he is birds'-nesting. Even the botanist is a hunter of a tamer sort, and, if the flowers could only run for their lives, botany would be more popular than it is. This hunting of butterflies, eggs, flowers, is not science, but it may, nevertheless, be very valuable as a training. It supplies a training in the art of seeing. If you exhort boys to go out and study the habits of birds and beasts, the result will be small. No doubt, if told of some remarkable trait, they are quite ready to be astonished; but the astonishment is soon over, and probably no remnant of it survives to stimulate investigation. The fact learnt remains barren. What is wanted is a good work-a-day motive, and this the hunting instinct supplies: and the hunter and collector *may* turn into a scientific observer, *may* become a thinker, and investigate the wonders of evolution.

But how is the collector to be turned into an observer? He may be urged to study the songs of birds as something connected with the eggs which he covets. Generally he takes little interest in them; there is nothing to show for his trouble. He may be induced to keep an aquarium, the habits of the inmates of which are, almost of necessity, a matter of interest. There are, of course, other ways in plenty which may succeed or may fail, according to the character of the boy in question. Then, how to make him into a thinker? You can put books of the right sort in his way, somehow make him feel that there are any number of difficult questions in Natural History to which no good answer has yet been given. In spite of all this, he may fall a victim to the collector's greed, and amass specimens in the spirit of the miser; or he may cease to take any interest in Natural History when he gets, say, to seventeen or eighteen.

It is not always the collector who is most capable of thinking. It is a good thing to set some of the problems of Natural History before some of the best intellects of the school, even if they have never shown any inclination to observe for themselves. It is not necessary to be a working naturalist in order to feel an interest in such problems. This being so, I recommend special meetings of those members of the Natural History Society who have attained to the sixth form. At these meetings subjects may be discussed which may set them all thinking without demanding much technical knowledge. Various objects will be attained by this means. Naturalists and those who take an interest in Natural History from outside will be brought together. It will prevent many members of the society from falling away, making them see that Natural History does not mean only the chasing of butterflies and robbing of birds' nests, but that it presents puzzles hard enough for anyone's brain. If allegiance to the society is maintained in this way, the younger members will be more ready to set to work. The small boy wants a lead, being often very vague as to what he likes or does not like.

Sections.—It goes without saying that there should be, if possible, special sections of the society for ornithology, botany, geology, microscopic work, astronomy, photography; but such sections cannot be worked if there is no master to look after them. The master must have an interest in the subject, and—what is becoming a very scarce article—leisure. Of the subjects just mentioned, botany is the best in some respects. Specimens are easily obtainable; nothing but a pocket lens is wanted by way of machinery; the interest is very great, and the principles of classification are easily explained. Ornithology presents great difficulties as a subject for teaching; classification depends much on abstruse points. Still there is an endless amount to be learnt about the habits of birds, notably about migration; and of this something can be observed by anyone possessed of eyes. Flight is a subject of first-rate interest, and an intelligent boy can understand a great deal about it. Most boys merely play at photography; but those who really study it have something that may be very valuable, *e.g.*, if they travel. Only a very exceptional boy can do much at astronomy, even if he has the run of an observatory and competent instruction. Microscopic pond-life, on the other hand, is a subject at which a boy can do a great deal for himself if he has a fairly good microscope and a place where he can use it. The chief obstacle in his way is the great expense of books. Monographs on crustaceans, rotifers, infusoria, &c., are very expensive, and without them he cannot identify the organisms he sees. If possible, such books should be put at his disposal if he shows that he is in earnest about his work. As to geology, much may be made of it if the country is suitable.

Expeditions.—For botany, ornithology, geology, a country ramble is a valuable thing if the boys are themselves observant. If it ends merely in their being shown things of interest, its value is not very great. Perhaps it is better for a large

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party to go to some centre of interest and break up into twos and threes. At any rate, boys must form the habit of going out by themselves in search of birds and flowers if they are ever to learn and use their eyes. A personally conducted party may sometimes do good work; very often the results are disappointing. Everything should be done to encourage enterprise. Call-overs should be excused as far as possible for a keen naturalist. There should be prizes to stimulate flagging zeal. The out-door naturalist is like a dormouse in his habits: he sleeps through the winter and wakes up to renewed energy in spring. This dormouse habit is altogether disastrous. There is no time of the year at which there is not a great deal to be learnt about Natural History. The entomologist can find moths during part of the Christmas term, and during the Easter holidays, very often. Flowers last on in fair numbers till November. The autumn, when birds are not so attractive, is the time to interest the ornithologist in botany; and the entomologist may also be induced to take it up, if only for the sake of knowing the food plants of his caterpillars. There is much to be found in the ponds even in the depth of winter. The songs of some few birds—*e.g.*, the robin, the thrush, the wren—can be learnt when the migrants are not here to cause confusion.

THE MUSEUM.—And there is museum work, for I take it for granted that the Natural History Society has a museum of some sort. This should contain types of the chief classes of animals, and there should be meetings—say once a week—in the museum, at which they are regularly studied. With the aid of diagrams to supplement the specimens, a great deal may be done. The Protozoa will be represented by diagrams. Of the chief classes of the Metazoa, the museum ought to have representatives to show.

MARINE ZOOLOGY.—It is most important that marine zoology should not be neglected. A museum in which there is no such thing as a sponge, a hydroid, a star-fish, or an ascidian, can hardly claim to give a good general view of the animal kingdom. Boys who come to the museum should be encouraged to draw both from the diagrams and the specimens. It is also important that they should write notes on what they are taught; otherwise (and even then) their knowledge may remain in a very ragged state.

THE FAUNA OF THE NEIGHBOURHOOD.—An important part of the work of the society is to draw up an account of the animal and plant life of the neighbourhood. Lists of mammals, birds, flowers, etc., should be bound up in a strong, flexible cover, with blank interleaves on which collectors can note what they find. New discoveries should be communicated to the proper authority, and entered by him with a view to a future edition.

OFFICERS.—As yet I have said nothing about the officers of the society. There must, of course, be a boy secretary; on him a great deal depends. He has to collect the subscriptions and overhaul the list of members; to write the minutes of the general meetings, and do a good deal of other miscellaneous work. Work may be found for an ornithologist, an entomologist, a botanist, a photographer, a microscopist, a draughtsman. Some of these officers will help in collecting the observations made by the members and in getting them recorded. Occasionally they will help in the museum. The photographer will make magic-lantern slides to illustrate lectures. I have omitted to mention the general meetings of the society. There must, of course, be several lectures every term—the demand of the British schoolboy for magic-lantern illustrations must occasionally be gratified. The draughtsman or draughtsmen will draw diagrams for lectures or for use in the museum. A recorder is a good institution, if he does his work well, the work being to call the attention of members to things interesting to naturalists, at meetings or in the columns of the school newspaper. Honoured with an office and a title, a man or boy *may* develop a surprising amount of energy.

PRIZES.—Prizes, too, are not to be despised as a stimulus. It may be right, no doubt, to trust to the inherent interest of the subject; but we live in days of over-exploitation. Each department tries to make a boy throw his whole enegies into its own particular sphere. Natural History has but small bribes to offer. It cannot afford to dispense with bribes altogether. Moreover, competition is a healthy thing, and it is good to stimulate it. Nowadays—let me say it again—we learn too exclusively from books. If the chance of a prize will make a boy go out and see for himself what Nature has to show, by all means let us offer one..

SECONDARY EDUCATION AND THE UNIVERSITIES.

THE subject of the relationship between the work of secondary schools and the entrance requirements of Universities is an old one, and its importance is appreciated by all who desire the reform of our educational system in the direction of modern needs and knowledge. It is well understood that higher education in England is what the Universities choose to make it, and that there can be little change or freedom until the whole range of subjects taken in a good school receives a share of recognition from University authorities. This has been said over and over again by leading representatives of secondary education, but there are special reasons why the subject should at the present time be given careful attention in all its aspects. The Senate of the new University of London will shortly produce their programme of requirements for matriculation and degrees, and whatever scheme is adopted it will have a decided influence upon the work of secondary schools. Moreover, the Committee appointed by the British Association to report upon the connection between the requirements of universities and the curricula of schools are col-

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lecting material for consideration, and it is to be hoped that some definite effect will be produced by the inquiry. It is not worth while to anticipate this report, but we may usefully consider the nature of the interdependence of schools and universities, and suggest some desirable changes in a system which enables authorities, often unfamiliar with their work, to draw up syllabuses which almost control the curricula of secondary schools.

At present few will deny that our universities, by their regulations, dominate the teaching in the secondary schools of the country. The older universities demand certain subjects from all who present themselves at their portals, and without these accomplishments the aspirant for university training knocks in vain. A natural consequence is that the great public schools are seriously concerned only with these subjects, and those parts of these subjects prescribed by Oxford and Cambridge. One example will suffice to justify this statement. At the Conference of Science and Mathematical Masters in Public Schools, held at the Imperial Institute last January, there was almost complete unanimity as to the desirability of adopting more practical methods of teaching mathematics, yet speaker after speaker had to admit that this was quite impossible, since the chief business of the public schools at present is to gain university scholarships and prepare boys to receive the instruction of their college tutors, an impossible task unless the behests of the universities are scrupulously obeyed.

Or, take the case of the ordinary grammar schools. We all know that the curricula of these schools are modelled upon the University Local Examinations with the Matriculation of the London University as a finishing, or leaving, examination. It is not pretended that all boys in the sixth forms of these schools are presented for the entrance examination of the University of London; but, since a certain number are, and headmasters have limited staffs, it is tacitly assumed that what is a suitable school education for a boy who intends to proceed to a college course is equally adapted to the needs of one who leaves school to take up the work of earning a living.

But the present condition of things under which the universities proceed to settle the lines of their entrance examinations, entirely from the point of view of what the different faculties consider to be the preliminary knowledge suitable for an undergraduate, is disastrous to the welfare of secondary education. The decrees of the university become the curriculum of the secondary school, and it seems reasonable to ask that university authorities acquaint themselves with the conditions of the secondary school. They might conceivably discuss with the headmasters what may properly be considered the objects of secondary education; it is not too much to suppose that by conferring together schoolmasters and dons could evolve a curriculum as suitable for the future undergraduate as for the embryonic merchant or manufacturer. Nowadays the most important of our secondary schools are merely institutions for the purpose of preparing for college; it is very doubtful whether they do the higher work of educating their pupils in the broader, more useful sense.

Secondary education should, on its intellectual side, have for its business the production of intelligent citizens with active, well-balanced minds, capable of reasoning justly, able to sift evidence, not easily gullible, and acquainted, withal, with the fundamental truths of Nature, and familiar with much of the best that has been said and done in the world. A boy fashioned after some such model would be able to take up with success the work of his college tutor, or of his employer, if he is not fortunate enough to proceed to a university course. Turn out boys of this kind and nobody will care whether they are brought up on Greek or chemistry, German or mathematics.

The old squabbles between the Humanists and the Moderns raised so great a cloud of dust that the combatants lost sight of the aims of education. True educators can rise superior to the claims of individual subjects to a first place, they are able to envisage the whole realm of human knowledge and to select impartially those subjects best suited to assist in the preparation of boys for the business of life. It cannot yet be said, despite all the talking there has been on the subject, that we have arrived in this country at definite ideas either as to the proper function of secondary education, or as to the most suitable curriculum by means of which to compass the objects for which secondary schools should exist. The uninitiated may suppose that the various associations of teachers in existence are concerned with these very problems, but alas, the national weakness for worshipping machinery has shown itself in their conferences. Much is heard of authorities, central and local, and next to nothing of guiding principles. Far more attention is given to the right of teachers to representation on all sorts of administrative assemblies, to the need for security of tenure and better salaries, than is bestowed on those fundamental principles on which rests our national well-being. Quite recently the formation of a National Educational Council was wrecked by this spirit of professional jealousy, the fear that more importance might be given to one branch of education than to another.

But that perennial spring of hope, of which poets sing, has again burst forth, and the British Association Committee may accomplish what schoolmasters themselves have failed to bring about. The Committee might usefully define the work which should be taken up in a secondary school, and urge a modification of entrance examination requirements which would make the school and the university an organic whole, and the curriculum of the former a suitable training for life. At the outset, however, it must be clearly understood that, as the object of the Educational Science Section is the application of scientific methods to all educational problems, any disposition to exalt the claims of science at the expense of other

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departments of education will effectually destroy the confidence which the Committee has secured. If a reasonable scheme is produced, it will be welcomed by many teachers, and public opinion may in the course of time induce university authorities to give attention to it.

THE ENGLISH COURSE FOR THE IRISH INTERMEDIATE EXAMINATIONS, 1902.

By H. MACAULAY FITZGIBBON, M.A.

Middle Grade (*continued*) and Senior Grade.

FOR the history of the literature of either period there is no better guide than Shaw's "Student's Manual of English Literature." Another capital guide is Low and Wyatt's "English Literature," part I. up to 1660, part II. from that date to 1832 (Clive), in which the nature of the principal works of the chief authors is well explained. Stopford Brooke's "Primer of Engish Literature" is a useful summary, but it is rather too scrappy. Robertson's "Outlines of English Literature" (Blackwood) is rather fuller and gives specimens: his longer history is excellent. Teachers may have recourse to the more extensive treatises of Hallam, Craik, Minto, and Henry Morley. Good studies of the middle course period are Perry's "English Literature in the Eighteenth Century" (Harpur), Beljame's "Le Public et les hommes de lettres en Angleterre au 18e siècle," and Dennis' "Studies in English Literature" (Stanford). The period embraces the principal Restoration dramatists, who can be well studied (by the teacher) either in Leigh Hunt's large volume containing the works of the four principal dramatists, together with ample biographies, or in the editions of Congreve, Vanburgh, and Wycherley, published in the Mermaid series (Fisher Unwin), and of Farquhar's "Beaux' Stratagem," with Introduction and Life, published in Dent's dainty Temple Dramatist series. The selected period also saw the birth and rise of the modern English novel, and for this important branch of the subject we would recommend teachers to read Mr. Walter Raleigh's excellent little work on "The English Novel" (Murray). Of course, the pupil is not expected to read these works.

The study of the history of literature must not be allowed to degenerate into learning a mere dry string of names, dates, and titles of books. There is a great difference between knowledge *about* literature and knowledge *of* literature. The student should not content himself with short snippets, "elegant extracts," culled from great authors; he should endeavour to master in its entirety at least one characteristic masterpiece by each great writer of the period.

As to the prescribed books, students will be expected to show a fairly familiar acquaintance with their contents. But with such an extended course, they cannot be expected to show such a minute knowledge of them as has heretofore been demanded. By "Steele: 'The Tatler'" it is to be presumed that the entire work is intended. If so, it is impossible that a full knowledge of its contents could be expected from the candidate. Moreover it is extremely difficult to procure a complete edition. Under these circumstances we would recommend students to content themselves with the admirable volume of "Selections from 'The Tatler'" in the Chandos Classics (Warne). It contains a good Introduction, 124 essays (76 by Steele), and sufficient brief explanatory notes. Mr. L. E. Steele's well-chosen Selections (Macmillan) are too fully annotated and only contain 20 essays in all. Teachers, however, should endeavour, if possible, to read the entire work and give a summary of its principal contents to their pupils. In these papers are to be found the best examples of Steele's style, and the attention of students should be drawn to its chief characteristics. Examples of these should be pointed out to the pupil, and he should be encouraged to find out other instances for himself. Teachers will find the introduction to Carpenter's "Selections from Steele" (Ginn) very helpful.

Swift's "Battle of the Books" is a difficult book for young students; its language is often antiquated and the construction of the sentences frequently involved. Moreover it literally teems with literary and classical allusions which it is absolutely necessary for the pupil to understand in order to grasp the author's meaning. It is, however, very characteristic of its author; exemplifying his extensive and thoroughly English vocabulary, his learning and versatility, his savage ridicule and irony, and his vivid power of imagination in conjuring up minute details of imaginary scenes. By far the most suitable edition is that published by Ponsonby (Dublin), which is furnished with an ample biography, introduction and notes.

The remaining book prescribed—Palgrave's "Golden Treasury of Songs and Lyrics"[1]—is a delightful choice; no better could have been made. The poems are not arranged in chronological order, but are grouped according to subject and feeling. This fact should be pointed out to the pupil. Similarities of thought and expression, parallel passages in the various poems, and the like, should be observed and compared, and felicity of phrase noted. The pupil should be encouraged to do this for himself and also to select favorite passages and lines. The summary to each book should be carefully studied and the various points there mentioned should be noted in the poems themselves. Incidentally, the various varieties of metre employed should be pointed out and explained. Campbell's "Higher English" contains a good section on metre and prosody; also "Analysis of Sentences," published by Blackwood, which treats

[1] As we go to press we learn that an alternative choice is now given for the "Golden Treasury," viz.: Milton's "Paradise Lost," Books VI. and VII., for the Senior Grade, and Newman's "Verses on Various Occasions" (omitting Latin poems) for the Middle Grade.

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well and fully of these subjects, and also of figures of speech, paraphrasing, &c. Obscure passages or phrases and archaic or dialectic words should be explained, but nothing in the way of elaborate notes is necessary. The great point is to teach the pupil to understand, to love, and to appreciate the poems themselves.

In studying Pope's "Iliad" the student should not confine himself merely to the text of the translation, but should learn as much as possible about Homer and his age, &c. For this purpose Gladstone's "Homer Primer" (Macmillan), Jebb's "Introduction to Homer," and the introduction to Tappan's "Pope's Iliad" (Ginn), along with a good classical dictionary and atlas, will be found useful. In the same manner, he should try to thoroughly grasp the true meaning and spirit of the works set for composition in the Senior Grade. Paraphrasing will be found of great service. It is a good plan for the teacher to talk over the passage and question the pupil on it before so doing. Of the various annotated editions of Tennyson's "Princess," that edited by Wallace (Macmillan) is perhaps the most suitable. It contains a good Life, with special introduction. Here will be found a useful explanation of the meaning of the poem, its purport and style. The notes are almost too full. Those who do not wish such an elaborate text-book may use George's edition (Heath), which has a much shorter introduction and much fewer notes. This work has some good explanatory notes on the inner meaning of the poem and some test questions. A very dainty little edition by Elizabeth Wordsworth is included in Methuen's Little Library Series, with a suggestive introduction and a few notes. For teachers' use Cook's edition (Ginn) is to be recommended. It contains a very elaborate and exhaustive introduction, deals at length with the metrical peculiarities of the poem, and has numerous questions in the notes, and many extracts from previous commentators.

The period of Literature selected for the Senior Grade is the greatest in English—nay, we may say, any literature. The Elizabethan age, emphatically the Age of Shakespeare, is, even if we eliminate his name and works, the most remarkable epoch in our literature, and the Board has acted very wisely in allotting it to the Senior Grade. Roughly speaking, the term "Elizabethan period" embraces the century from 1560 to 1600, including not only the reign of Elizabeth but also those of James I. and Charles I.—from the appearance of Tottel's "Miscellany" down to that of Milton's "Paradise Lost"—but, in strictness, it begins about 1580 with Lyly, Spenser, Sidney and Peele, and closes a few years after the death of Shakespeare, *i.e.*, about 1625, with Burton, Drayton and Shirley. This period saw the birth of modern English prose and poetry. Its great glory, however, is its drama, which most closely reflects its spirit. For this important branch of the subject, the following books will be found of service *by teachers*: Pollard's "Miracle Plays" (for the first beginnings of the English drama; Clarendon Press); Boas' "Shakespeare and his Predecessors" (Murray); Ward's "English Dramatic Literature," vol. 1 (Macmillan); Minto's "Characteristics of English Poets" (for both dramatists and poets: Blackwood). For Shakespeare study, the following are good: Coleridge's "Shakespeare Notes and Lectures," and Moulton's "Shakespeare as a Dramatic Artist" (very advanced; Clarendon Press). For Spenser: Lowell's "Lectures on English Poetry" (Scott). For general literary history of the period: Saintsbury's "Elizabethan Literature" (Macmillan); Whipple's "Literature of the Age of Elizabeth" (very advanced; Houghton, Mifflin & Co., also published in "The Atlantic Monthly," 1867-8); and Hazlett's "Elizabethan Literature" (Bell & Daldy). Books suitable *for students* are: Dowden's "Shakespeare Primer" (Macmillan) and Miss Lee's "School History of Literature" (Blackie). They should not, however, confine themselves to mere text-books of facts and ready-made criticisms, but should form a personal acquaintance with at least some of the principal writings of each author. For this purpose, Garnett's "Specimens of English Prose" (Ginn), Miss Masson's "Three Centuries of English Poetry" (Macmillan), and "Famous Elizabethan Plays,"[1] carefully selected and expurgated, will be found of service.

Of the numerous school editions of Shakespeare's "Henry IV.," the best is Rolfe's (Clive). The Introduction is good, gives a history of the play, sources of the plot, and many excellent critical comments by various authorities. The notes are full, giving copious extracts from Holinshed's "Chronicles." Daniel's Time Analysis is a useful feature. Another excellent edition is Deighton's (Macmillan), which contains a capital analysis of the play and of the principal characters. The notes, however, are unnecessarily long. Hudson's edition (Ginn) also contains an excellent and lengthy introduction, on much the same lines as Deighton's. The explanatory notes at the foot of the pages are good, but hardly full enough. The critical and textual notes are put separately at the end of the volume. Both these latter editions contain an excellent commentary on the character of Falstaff. Messrs. Chambers publish a school edition, with a short historical and bibliographical introduction and comments by famous critics; also a few notes. The edition by Miss C. Yonge (Nat. Soc. Dep.) is abridged, but the introduction is useful as giving the real history of the time and pointing out Shakespeare's variations from it; it also contains useful summaries of each scene and act. As regards the text, Rolfe & Hudson's editions are slightly, and Deighton's and Chambers' fully Bowdlerised. For the historical aspect of the play, teachers may read Reed's "English History from Shakespeare" (Shaw); and for the general history of the period Creighton's "Age of Elizabeth" (Longmans).

For the Bacon's "Essays," the most complete edition is West's (Pitt Press Series). A short

[1] Out of print, but copies can be had from M'Gee, Dublin, 2s. 6d.

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induction treats of Bacon's style and position in English literary history; obscure words and phrases, and the Latin quotations in the text, are explained in concise foot-notes. There is a capital index of proper names of persons and places mentioned, a list of works quoted, and an appendix of the peculiarities of Bacon's grammar and phraseology; also a chronological table and a bibliography. The old spelling is retained. Another excellent edition is Selby's (Macmillan), with a long philosophical introduction (suitable for teachers), and good but rather voluminous notes. The Latin phrases are translated. Messrs. Browne & Nolan publish two "Selections," which contain all the prescribed essays save two (Nos. 6 and 20). These contain fairly good introductions and notes—the latter rather too philological. If these are used, the two additional essays can be studied in Cassell's National Library edition (3d.). Another good, cheap, complete edition is Chambers', with brief Life and notes. The spelling of all these is modernised. Teachers may read also Church's "Life of Bacon" (English Men of Letters Series) and Reynolds' Introduction to his edition (Clarendon Press Series); also Fowler's "Introduction to the 'Novum Organum'" (*ib.*) for an able dissertation on Bacon as a philosopher and the influence of his works.

One word of warning in conclusion: it should never be forgotten that the author's text is the one thing of importance, and that notes are entirely subsidiary and secondary to it. The first and principal aim should be to study the text, pure and simple, by itself, without the aid of any commentator or annotator, no matter how learned or how world-renowned. When this is accomplished, then the introductions, notes and commentaries may be consulted. Literature is to be studied not as an exercise in philology and etymology, or in grammar, or in rhetoric, or even in history—which are all distinct branches of learning, good and necessary in their own place—but for the wisdom, the beauty, the elevating and refining thoughts which it bodies forth in words. Allusions, obscure phrases, and the like, should no doubt be explained in order that the text may be thoroughly understood, but if too much stress is laid on such things, then the study of literature is apt to degenerate into a mere pedantic and trifling study of the letter in place of the spirit. What is of real importance is, first and above all, the substance, the matter; then, secondly, the outward form, the manner of its expression. The student should strive to understand the literary and artistic significance of the work—to gain, as it were, insight into the author's soul, to understand and appreciate his genius. But, above all, let him avoid a mere parrot-like repetition of superficial and borrowed criticism. A genuine knowledge of literature does not consist in carrying in one's head a complete digest of the opinions of others and all the "straight tips" for examinations.

If literature be studied earnestly on the lines indicated above it will well repay the labour necessarily entailed by so doing.

AN OLD FRENCH CHRONICLE AND MISS YONGE'S "LITTLE DUKE."

By M. S. SHEARME.

TO a lover of mediaeval times there can be no more fascinating occupation than the study of ancient historical chronicles, and it is especially interesting to trace in them the sources of many a well-known poem, play or romance. For instance, how instructive it is to compare some of Shakespeare's historical plays with the Chronicles of Hollinshed and Hall, and to observe how cleverly the great author has culled his information and made use of characteristic, if almost trifling, incidents to weave into his work. Or again, what can be more interesting than to read "Percy's Reliques" and "The Chevy Chase" side by side with Froissart's account of the Battle of Otterbourn? Just at this time, when the name of Charlotte Yonge is fresh in our memories—connected too with another Otterbourn in Hampshire—it may not be out of place to consider the sources of her charming story "The Little Duke." In her notes at the end of the book Miss Yonge refers to "the rhymed Chronicle of Normandy" and to Michel's "Histoire des ducs de Normandie;" but it is more than probable, as this article will show, that she derived much of her information directly or indirectly from "Le Rosier et Epitome Historial des Grandes Croniques de France," published in Paris in 1528.

A copy of this volume is in my possession, printed in black-letter type with many abbreviated words, puzzling at first sight, and full of quaint woodcuts, three of which are here reproduced, illustrating the history of the world from the Creation to the early part of the reign of Francis I. in 1517.

The following extracts from the book are of interest to students of the French language as well as to students of history. The extracts begin with the valiant deeds of Rou or Rollo, the grandfather of Richard Sans Peur, the "Little Duke."

L AN IX. C. que les francois cuidoient estre appaisez aux danois se esleverent audit pays Dannemarche, autres danoys normans soubz la conduicte dung prince nomme Rou se partirent dudit pays par sort pour la multitude qui habondoit et arriverent par mer en angleterre et eurent aucunes batailles aux gens du pays, mais le roy Dangleterre nomme Adelsten le recueillit et firent alliance entre eulx qui leur servit.

L an ix. c. et ung Rou vint descendre en la riviere de Seine et alla contremont par le pays de Caux, jusques a une abbaye nomme Jumieges et trouva qu'elle avoit este destruicte par Hastend qui de Dannemarche estoit semblablement venu navoit pas long temps. Et monta ledit Rou jusques a Rouen, et luy vint a l'encontre larchevesque du lieu nomme Franques, lequel voyant quil navoit nul secours ne ayde du roy de France Charles le Simple offrit audit Rou lobeyssance de la ville par composition que il les tiendroit en justice selon la foy Jesuchrist.

Lan ix. c. & x. ledit Rou assiega la cite de Chartres, et la deffendit assez bien le conte Thibault de Chartres, mais a la fin ne scavoient plus que faire quant le bon evesque du lieu nomme Gosseaume porta a lencontre deulx qui estoient sarrazins la chemise nostre dame, que Charles le Chaulve avoit apportee de Constantinople, & autres belles reliques dont ils furent si

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effrayez que Rou et ses gens senfuyrent, et en eut plusieurs deffaitz a la poursuyte. . . . . .

Lan ix. & c. et douze ledit roy Charles le Simple avecques les barons de son royaume et aussi ledit Rou se assemblerent su la riviere Depte et firent appoinctement ensemble par lequel ledit

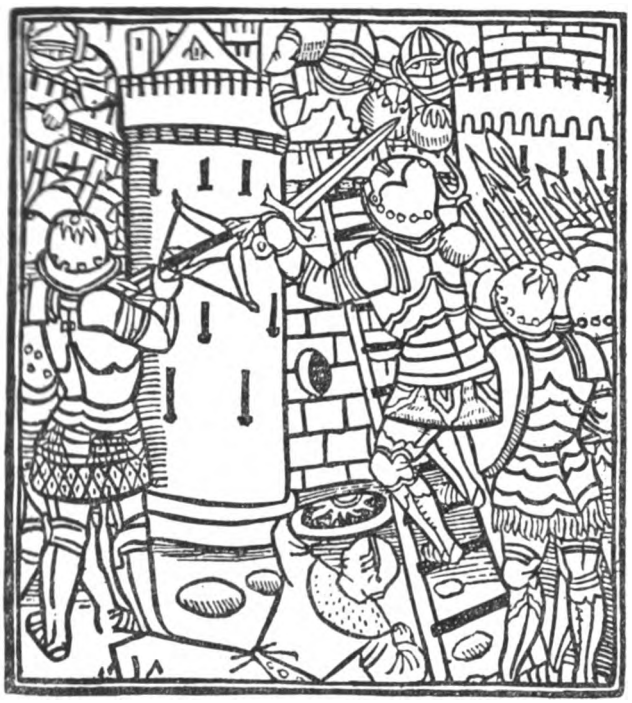

FIG. 1.—Siege de chartres mis par Rou le danois. Rou et ses danois effrayez p la chemise nostre dame.

roy laissa avoir audit Rou tout le pays de Neustrie, depuis ladicte riviere depte jusques en bretaigne, par ce quil seroit chrestien et luy en feroit hommage, et prendroit a femme Gille fille dicelluy roy. Et incontinent ledit Rou fut baptize par ledit archevesque de Rouen, & fut nomme sur fons[1] Robert par robert duc de france et fist hommage audit roy, et espousa ladicte Gille ou il y eut noble feste et grande qui fut tenue a rouen. Et deslors tout ledit pays de neustrie print a nom Normandie a cause desditz danoys normans.

Lan ix. c. & xiii. le dit roy Charles le Simple voulut donner audit Rou lhommage du pays de Flandres ce quil reffusa pour avoir la souverainete de Bretaigne, & adonc Allain et Berenger qui seigneurs estoient dicelluy pays en firent hommage audit Rou. . . . . .

Lan ix. c. xvii. ledit Rou duc de Normandie trespassa lequel avoit este homme magnanime & de grant conduyte. Et combien que avant quil fust chrestien il fist moult de maulx et de destructions de pays, toutes fois avoit il tousiours crainte de dieu, et ne tirannisoit pas ne violoit les esglises comme avoient fait aucuns autres qui estoient venuz devant luy. Et mesmes quant il fut chrestien vescut vertueusement & catholiquement en augmentant les revenues des eglises, tant de leglise cathedrale de Rouen, de Bayeulx, Devreux, du mont sainct Michel, de Jumieges, de sainct Ouen, de sainct Denys en France que autres. Et aussi fit tres estroictement garder justice tant que en son temps nul neust tollir ne oster rien lung a lautre, tellement que apres sa mort quant aucun oppressoit lautre on le regretoit. Et disent pays avoir une coustume quilz appellent Harou qui fut introduicte en memoir dicelluy Rou premier duc de Normandie qui les avoit tenuz en si bonne justice.

[1] At the font.

Miss Yonge sketches the history of Rou with a few clever touches. The passages given below show how closely she adhered to the old Chronicles which have been quoted.

(1) Dame Astrida told Richard "How Earl Rollo, his grandfather, had sailed into the mouth of the Seine, and how Archbishop Franco, of Rouen, had come to meet him and brought him the keys of the town, and how not one Neustrian of Rouen had met with harm from the brave Northmen. Then she told him of his grandfather's baptism, and how he had made large gifts to all the chief churches in his dukedom of Normandy." . . .

(2) "A cry from without arose . . repeated by a multitude of voices, 'Haro! Haro!'

"It was well known as a Norman shout. So just and so ready to redress all grievances had old Duke Rollo been that his very name was an appeal against injustice, and whenever wrong was done the Norman outcry against the injury was always 'Ha Rollo!' or as it had become shortened, 'Haro'" . . .

(3) "Richard might well observe that the people ought to learn Fru Astrida's story of the golden bracelets which in his grandfather's time had hung untouched for a year in a tree in a forest."

The Chronicle continues thus:—

Apres lequel Rou, fut duc de Normandie Guillaume Longue Espee son filz, lequel assez tost apres espousa Sphorta fille de Herbert Conte de Senlis.

It is then related how, to revenge the death of Robert, Duke of Aquitaine, his brother-in-law,

FIG. 2.—Guillaume Longue Espee.

Count Herbert of Vermendois entrapped King Charles the Simple and some of his barons and kept them prisoners, how Queen Ogine fled with her son Louis to the English Court, and how Raoul, Duke of Burgundy, became King of France. Then, after the deaths of both Charles and Raoul:

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Lan ix. c. xxviii. Adelstan roy dangleterre par ses legatz et ambassadeurs pria a Guillaume duc de Normandie filz du dessus dit Rou que il fist tant que Loys son nepveu filz de ladicte Ogine et du feu roy Charles le Simple fust restitue au regne de son pere. Aquoy le duc Guillaume de Normandie y entendit de bon & grant courage, & de laccord de Hue le Grant conte de Paris, & des nobles, a des evesques du royaulme de France il

FIG. 3.—Louis IIII roy de France.

envoya en angleterre Guillaume archevesque de Sens devers ladicte royne Ogine mere dudit Loys, et moyennant bons ostages ledit Loys fut ramene en france, et fut sacre a Laon et couronne roy de France. . . . Ledit roy Loys espousa Greberge fille de Henry roy Dallemaigne, dont il eut deux filz Lohier et Charles.

Lan ix. c. xlii. le duc Guillaume de Normandie fist restituer le chasteau de Monstereul a ung chevalier picard nomme Heloyn auquel Arnoulph le conte de flandres lavoit tollu par force. Pourquoy ledit conte conspira contre le duc de Normandie, et luy manda a Rouen quil parleroit voulentiers a luy pour faire quelque bonne alliance. Et pour ce faire se trouverent a Picquegny sur Somme, et dedans une petite isle dirent plusieurs belles paroles. Et comme le duc sen vouloit retourner par ung petit bateau ledit conte le fist revenir faignant luy vouloir dire encore ung mot, mais quant il fut tout seul ne pensant a nul mal icelluy conte le fist occire & meurdrir villainement sans quil peust estre secouru de ses gens qui lattendoient sur le bort de l eaue. Son corps fut aporte a rouen et gist en l eglise cathedrale. Le dessusdit duc Guillaume Longue Espee donna aux chanoines de Rouen le pain et le vin quilz ont de rente par an. Aussi il fist refaire l abbaye de Jumieges. Auquel lieu il se voulut rendre moyne comme il declaira plusieurs fois luy vivant. Et aussi apres sa mort fut trouve en son secret une haire, une corde et tout lhabit dung moyne.

Lan ix. c. xliii. apres la mort dudit duc Guillaume le roy Loys de france vint a Rouen la ou il receut Richard filz du dessudit duc Guillaume en foy et hommage de la duche de Normandie. Et pource que ledit Richard estoit fort jeune ledit roy le voulut mener a Laon pour estre nourry et endoctrine avecques ses enfans en promettant de luy garder ses droitz vers et contre tous. Et que avecques ce vengeroit la mort dudit duc Guillaume son pere, & demoura pour gouverner le pays Bernard le danoys qui estoit moult vaillant homme qui avoit tousiours este audit duc Guillaume. Et quant le conte de Flandres sceut que ledit roy faisoit mention daller sur luy il luy envoya ung moult beau present en disant quil se submettoit a luy et que de la mort du duc Guillaume il se purgeroit bien en sa presence, dont ledit roy Loys se contenta assez legierement.

Lan ix. c. xlv. pource que ung Chevalier de Normandie nomme Osmond centvilles qui avoit la garde a Laon du duc Richard vit que le roy tenoit plus rudes termes audit Richard quil navoit acoustume et quil avoit commande quil fust garde plus estroictement quil ne souloit, eust doubte que ledit roy ne voulsist faire quelque maulvais tour a son seigneur Richard. Pourquoy eurent conseil ensemble que ledit Richard feroit du malade affin que on neust pas si grant guet sur luy. Et quant il vit son point il coucha icelluy Richard dedans un fardeau dherbe quil emporta hors la ville ou il trouva chevaulx prestz, et incontinent fut mene devers son oncle le conte de Senlis a Coucy, lequel en fut bien joyeulx & le mena a Senlis ou il le garda songueusement. Et alla devers Hue le Grant conte de Paris luy prier quil aidast a son dit nepveu ce quil luy promist faire, aumoins quil ne seroit point coutre luy.

Apres que le roy Loys sceut que le duc Richard luy estoit eschappe fut moult desplaisant & manda Arnoulph le conte de Flandres venir devers luy, et conclurent ensemble que le roy offreroit a Hue le Grant conte de Paris les contez de Bayeux Evreux & autres pays oultre la riviere de Seine et quil luy aidasta conquester la reste de normandie, ce que ledit Hue par convoitise luy accorda et fut conclud que le roy yroit assieger Rouen & ledit Hue Bayeulx.

Lan ix. c. xlvi. le roy Loys vint devant Rouen pour lassieger, et adonc Bernard le danois gouverneur dudit pays considerant que par le siege le pays seroit destruit, & aussi que les alliances du roy & du dessusdit Hue le Grant estoient facilles a rompre, delibera par cautelle laisser le roy entrer paisiblement dedans rouen. Et apres que le roy eut prins la possession de ladicte ville ledit Bernard luy remonstra comme se esbahyssoit que il vouloit donner a icelluy Hue si grant partie dudit pays de Normandie et quil valloit mieulx quil le gardast pour luy. Et par tant le roy manda audit Hue quil cessast & quil ne vouloit point son pays estre ainsi destruit. Pourquoy ledit Hue se retira en France et eut grant desplaisir contre le roy quil luy avoit failly de couvenant. Cependant ledit Bernard le danois envoya secretement devers le roy Aygreld de dannemarche qui estoit cousin du duc Richard affin quil luy pleust secourir hastivement sondit cousin que le roy de france vouloit dehseriter . . . .

Lan ix. c. xlvii. Heroult roy de dannemarche a tout bien xxii. nefs descendit a Chierbourc. Et quant Bernard le danois le sceut il le manda hastivement audit roy Loys qui estoit retourne a Laon lequel le plustost quil pent avec tant de gens comme il peut finer vint a Rouen & sen partit avec ledit Bernard pour aller combatre contre icelluy Heroult. Et quant ils furent pres lung de lautre ledit Heroult par l industrie dudit Benard somma ledit roy de france de faire raison a Richard son cousin. Et ainsi que les deleguez parlementoient ensemble ung chevalier danois congneut que Heloyn le seigneur de Monstreul auquel le duc Guillaume avoit fait rendre son chasteau estoit contre Richard filz dudit duc Guillaume, parquoy en reprochant audit Helouyn sa laschete le frappa dune hache & le tua. A loccasion de quoy commenca la bataille aspre et dure ou furent les francois desconfitz. Et comme le roy Loys se cuidoit sauluer il fut prins et le fit Benard le danoys mener a Rouen . . . .

Lan ix. c. xlviii. le dit roy loys de France a la poursuite dudit Hue le Grant & par le moyen de Benard conte de senlis, et de Benard le danoys fut delivre de Rouen moyennant quil bailla en hostage lohier son aisne filz avec Aderic evesque de beauvais et Guy evesque de Soissons, lesquelz assez tost apres furent delivrez parceque ledit roy loys fit paix au duc Richard.

Lan ix. c. liii. ledit duc Richard de Normandie nomme

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Richard sans Paour espousa Auyne alias Agnes fille de Hue le grant duc de france & conte de Paris dont le roy loys de france ne fut pas bien content.

After this, Arnulf of Flanders, fearing that Richard will certainly avenge his father's death, points out to Louis that the Duke of Normandy and the Count of Paris, the two most powerful nobles in France, are now allies; therefore, would it not be well to destroy them? To do this the aid of Otho of Germany is enlisted. The lands of Hugh and Richard are invaded, and Rouen, we are told, "is besieged with marvellous assaults, the Germans and French had more loss than gain." Thoroughly dispirited, Otho determines to make peace by giving up Arnulf into the hands of Richard, but Arnulf, getting wind of the plot, escapes during the night.

Mais pour le bruit quil faisoit les francois & allemans qui cuyderent que ce fussent les normans qui les voulsissent assaillir se esmeurent et senfuyrent apres les autres. Et quant lesditz roys veirent ce sans ordre se deslogerent et leverent leur siege dont le duc Richard fut adverty par ceulx qui estoient au guet et saillit sur eulx & les chassa en tuant tout quil attaignoit. Et mesmes en y eut grant occision par les gens du pays pource qu ilz senfuyoient celement a qui mieulx mieulx.

Our hero's whole life seems to have been taken up with repelling the treacherous inroads of his enemies. Louis and Arnulf left him no peace till the former died in 955 and the latter in 964. King Lothaire followed in the steps of his father, making promises and breaking them, and ever on the watch to regain possession of Normandy. He died in 986 in the thirty-first year of his reign. Miss Yonge makes him die "in early youth," and there seems to be no foundation for the pretty ending to her story where Duke Richard freely forgives and protects the murderer of his father from those who are in pursuit of him. Two more short extracts from this quaint old Chronicle must bring this article to a close:

Lan ix. c. lxxix., le premier richard duc de normandie appelle Richard sans paour augmenta fort labbaye de Fescamp et osta des nonnains qui y estoyent et les mist a Montjuilier ou il leur fit faire ung monastere, et audit Fescamp mis Chanoines reiglez et clercs, et apres y mist moynes. Aussi il fist grandement croistre et haulcer leglise nostre dame de Rouen, et augmenta fort labbaye de sainct Ouen et le mont sainct Michel . . . .

Lan ix. c. iiii. xx. et seize le premier Richard duc de Normandie appelle Richard le grant ou sans paour trespassa et fut enterre en l abbaye de Fescamp en une toumbe soubz une goutiere ou il avoit esleu sa sepulture, & y a este fait depuis une chapelle, auquel succeda Richard son filz second de ce nom.

PARENTS and teachers would more frequently punish according to the line of exact justice if, after every fault in a child, they would only count four-and-twenty, or their buttons, or their fingers. They would thereby let the deceiving present round themselves, as well as round the children, escape; the cold still empire of clearness would remain behind, and the child, as well as father, would learn in the reflected mutual pain to regard that of the other.—Jean Paul Richter's "Levana."

THE FIRST COURSE OF LECTURES ON EDUCATION GIVEN IN ENGLAND.

By FOSTER WATSON, M.A.
Professor of the Theory and Practice of Education in the University College of Wales, Aberystwyth.

IT is only quite recently that lectures on education have been delivered in an English university. The late Rev. R. H. Quick gave the introductory lecture to the first continuous course in the University of Cambridge on October 18th, 1879, taking as his subject: "The Schoolmaster Past and Future." But I wish to go back as far as the Commonwealth, and to speak of some lectures which would seem to have been given then, not merely on the materials, content or curricula of the school, but on the theory of education itself. I call these lectures the first course given in England because I know of none earlier, and I should rejoice to see the notice produced of any earlier. Until such is brought forward I venture provisionally to call them the first.

There can be no doubt that John Dury has not received due attention from historians of education. His "Motion tending to the Public Good," his "Seasonable Discourse," his "Reformed School," are all of high significance in the development of educational ideas. He certainly was known in his own day as a keen promoter of educational thought. He received recognition in the Commonwealth period so far as to be employed on missions abroad to bring about no less vast a design than the unification of Christians, and he had many friends at home who sought that his services might be secured to aid Hartlib in the establishment of an Office of Address, which might be the means of communication between the learned and the seekers of truth in all nations. But we learn in "An Information of Mr. Dury's Case" (British Museum, additional MSS., Political and other Papers, 1640-1659, No. 24, 863, p. 80), "he was sent to Winchester to help to reform that place." Now, in the Sloane MSS. (649, p. 52), we are given a MS. entitled "Mr. Dury's Exercitation of Schooling," May 3rd, 4th, 1646, and in the same collection, dated May 4th and 7th, 1646, "The Heads of Matters to be thought on concerning the Education of Nobles and Gentlemen" (Sloane MSS., 649, p. 54). The title of the second paper as to the education of nobles and gentlemen lends some strength to the supposition that Mr. Dury addressed his remarks to those concerned with education when he was sent down to Winchester "to reform that place." The dating of his papers, May 3rd, 4th, 4th, 7th, looks as if these were notes for such a purpose—and the notes themselves are such as to require the filling in which could be given on oral delivery.

The first paper consists of notes as follows (*verbatim* transcript):

MR. DURY'S EXERCITATIO OF SCHOOLING.[1] *May* 3, 4. 1646.

Matters to be Elaborated for the Education of Children.—(1) The Necessity and Usefulness of the Work of Education to

[1] The MSS. has the Note: "Hartlib's handwriting."

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all Societies of Men; to the Church of G. esp.; to the present Reformation of Church and State now intended.

(2) To whom the care of providing for the advancement of this work doth properly belong, viz.:—To the Magistrate. Supreme. To the Ministrie. Subordinate.

(3) The true end and aime for wh. the work is to be set afoot and advanced, viz.:—to make children's Minds sound and bodies healthful: to set them in a way to become serviceable unto others—Publicly and Privately.

(4) The Means and Ways necessary to gain those ends are two: (i.) Schoolmasters must be fitted and enabled to go about the work—By Directions and Rules—by Helps and Assistance—to support them with (*a*) livelihood, (*b*) authoritie; to encourage them with rewards; by Correctors and Overseers; to call them to an account; to reform what is amiss; (ii.) Schools and scholars must be ordered and fitted for the instruction and care of schoolmasters.

CONCERNING THE SCHOOLS.

Schools.—The schools should be public and of two sorts.

Of Thinges.—Common to all, teaching to [all] in their mother tongue the right (*a*) Notions, (*b*) Names of things, (*c*) Expressions.

Tongues.—Peculiar to some: (*a*) Hebrew; (*b*) Greek; (*c*) Latin; for the tongues of training of commerce: (*d*) French; (*e*) Spanish; (*f*) Italian.

Arts for the Vulgar.—For the Arts and Sciences whereby these sorts of People are to be fitted for their employments in the Commonwealth. (i.) The Vulgar for Trades and Servile Work. (ii.) The Learned for increase of science and training up of others [ ]. Learned. (iii.) The Nobles to fit them for public Charges in Peace and War. Nobles.

CONCERNING SCHOLARS.

The schollars should be fitted for their schoolmasters care before they come to schoole, viz.:—Whiles they are yet with their Parents and Nurses (who are to be directed how to make them docile).

After they are at school by subordinate Overseers, Ushers, Tutors, etc., who are to be directed how to make them diligent and attentive to what is taught.

The references to nobles, and to those who are able to provide due preparation for children before coming to school, and when at school, the equipment proposed is to be a liberal one. The provision for overseers, ushers, tutors, &c., points to the circumstances of a school like Winchester. Seeing that our MSS. tells us that Dury was sent to Winchester "to reform that place," and that these heads are exactly suitable to discourses such as Dury might deliver there, I suggest that the delivery of lectures may have been part of his method of attempting "to reform that place."

The second paper in the Sloane MSS. Collection is entitled, "The Heads of Matters to be thought on concerning the Education of Nobles and Gentlemen." When Dury is writing his treatise, the "Reformed School," it is to be noted that he specially requires the education of girls as well as boys. The methods which he suggested in that book are simply human and philanthropic, and, as far as one can judge, his views are democratic, regarding education as the priceless gift for all who are capable of it. "The Reformed School" was written in 1649. Why, then, in 1646 is Dury bestirring himself as to the education of nobles and gentlemen unless it is for some special purpose? Remembering his mission to Winchester, is it not possible, if not probable, that this is a point of view which he thought would be specially interesting to the particular people whom he had to address? The stress which he lays upon the advantages of position as involving responsibilities and due preparation to meet them, characteristic though it is of Dury's teaching, is just what he would be likely to regard as particularly suitable to Winchester School.

Mr. Dury (Dated 1646, *May* 4 and 7).

THE HEADS OF MATTERS TO BE THOUGHT ON CONCERNING THE EDUCATION OF NOBLES AND GENTLEMEN.

(1) First, we must reflect upon that wh. we call Nobilitie and Gentrie to know what we meane by it. Namely, a Pre-eminence in Honor above others of the Vulgar Sort.

(2) That there is such a thing in Nature and in all Humane Societies is to be made good.

(3) Whence Pre-eminence in Honor doth arise, viz.:—from the Advantages which some have above others to do most good to Many. And what true Honor is, viz.:—A well deserved affection and respect given to such as make right use of those Advantages.

(4) The Advantages which Noble and Gentlemen have above the vulgar sort are chiefly two. The one is largeness of Possessions, the other nearness of access to places of employment for the Public; the first is the Advantage in the Body, the second in the soule, of a State.

(5) The right use of these advantages to the end for which God doth give them is not natural to any man, but must be attained by Institution and Habit.

(6) The ground of Institution fit to beget Habits is good education.

(7) The ground of good education is the end and aim of Institution.

(8) The end and aim of Institution in Noblemen and Gentlemen is to fit them to the employments for which God hath given them their Advantages amongst men above the Vulgar.

(9) These employments can be nothing else but charges of serviceableness for the Public Good.

(10) These services must needs relate either to the Soule or the Body of the State severally or jointly.

(11) To discharge these services their education must fit them with abilities both of Mind and Body, and be fitted towards them so as to put them in a settled course to increase and to improve the same to their true ends.

(12) From all which followeth that to order the way of educating Noble and Gentlemen, and this must be distinctly handled.

(1) What the Proper Employments are of Noble and Gentlemen in a Commonwealth.

(2) What the abilities are which must fit them for those employments.

(3) How these abilities are to be gained and improved, and how their education should be so ordered as to bring this effectually to pass for the good of the Commonwealth.

Of the Employments.—(1) The Proper Employments of Noble and Gentlemen are either of their Mind or of their Bodily Strength in order to the mind for Counsel or for action subordinate thereto.

(2) The employment for counsel is in the way of Peace or of War.

(3) The counsels in the way of Peace are either to settle and preserve the welfare of the Commonwealth or to enlarge it.

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(4) The Settlement and Preservation of the welfare of a Commonwealth is chiefly within itself, the enlargement thereof is in respect of foreign parts.

(5) The counsels in the way of war are either for Land or Sea-Service, at home or abroad.

(6) The employments depending upon those ways of counsel are offices and charges of Trust such as are:—(i.) Peers in Parliament. (ii.) Privy Counsellors. (iii.) Judges in the Court of Justice. (iv.) Or in other Judicatures ordinary or extraordinary as may be appointed of different kinds. (v.) Superintendents of Commerce and Trade and commissioners of several sorts, as—(*a*) To look to inferior Officers to see the ways of their Administration of their charges. (*b*) To have an eye to strangers and People without employment in the State. (*c*) To over-see and patronise churches and schools, to advance Religion and Virtue therein and such-like which the welfare of a State may require.

(7) The employments of Action as subordinate unto counsel are such as these.—(i.) Governors of Provinces and Places of importance. (ii.) Collectors, Receivers and Dispensers of the Revenue of the State. (iii.) Generals of Armies, Lieutenant Generals, Field Marshals, Co(l)onels, etc. (iv.) Admirals at sea. (v.) Directors of Plantations. (vi.) Ambassadors to foreign States and such.

(8) In all these Employments the point of Action is every Enterprise depending upon the foregoing charges as it is directed by counsel, chiefly when there is any difficulty therein, requiring some industry in the execution to bring the effect of the counsel to pass.

(9) How all such enterprises tend either to work the spirits and affections or the bodies of men into some frame expedient to the welfare of the Commonwealth.

(10) The enterprises tending to work men's spirits and affections to some good frame are to be executed by persuasion.

(11) The exercises tending to work men's bodies to a frame are outward exercises.

Such are Mr. Dury's notes.

My argument may be put thus: Dury is sent to Winchester to reform that place. There are two sets of notes, dated for certain *particular days*. The subjects selected for treatment are suited to an audience such as might be expected at Winchester. They are rather aristocratic than (according to Dury's ideas expressed elsewhere) democratic, and therefore seem to point to a special occasion.

On the general question—the education of noblemen and gentry—it should be added that this is a subject which has been somewhat overlooked in the history of English education. It is in such essays that we are most likely to find the best idea of education, as logicians would say, in *intension*. Dury was certainly keeping himself well in continuity with previous writers by taking up this point of view. For there had been Sir Thomas Elyot's "Governour" in 1531; the "Institution of a Gentleman" in 1555; Lawrence Humfrey's "The Nobles" in 1560; Hoby's translation of Castiglione's "Courtier" in 1561; Sir Humphrey Gilbert's "Queen Elizabeth's Academy" in 1572; William Jones' translation of "Nennio" in 1595; Keper's translation of Romei's "Courtiers' Academie" in 1598; in 1622 Henry Peacham's "Compleat Gentleman"; and in 1630 Richard Brathwait's "English Gentleman." John Dury follows in the train of these writers in these Notes on the "Education of Nobles and Gentlemen." Where he differs from them is in his known further interest in the education of the vulgar as well as of the higher classes. He is at once an aristocrat and a democrat in education. His all-round view of education surely made him a suitable man, if there was need to send any one to Winchester "to reform that place."

I suggest, then, that the first lectures on Education given in England were by John Dury, at Winchester, in 1646.

THE CLAVIER SYSTEM OF TEACHING MUSIC.

IT was remarked once by an eminent student of psychology that the more stupid people are the less are they sensitive to noise. If this statement is true, it should make some of our legislators wince, since, for the most part, legislative enactments in England provide against assaults upon all the senses, that of hearing alone excepted. Against barking dogs, railway whistles, crowing cocks, the piano next door, we have no remedy.

So it turned out recently at the Court of King's Bench that Mr. Davison, who lives next door to the Queenswood School for young ladies, was only just able, after the cost and worry of a three days' trial, to secure that the fifteen pianos in use in the school should be played on for eleven hours a day instead of fifteen.

This trouble, which is as essential to the executive musician as tobacco is to a smoker, has been made the text of a sermon preached by the followers of Mr. A. K. Virgil, the inventor of the Clavier system of pianoforte teaching, a system which is carried out on an instrument which produces no musical sound. In the July number of Mr. Virgil's literary organ, the *Clavier*, appears a tabulated comparison between the ordinary method and the Clavier method of pianoforte teaching, study, and practice. The table exhibited proves beyond possibility of cavil that the use of the clavier may result in a gain of time, money, nervous wear and results, to pupils, teachers, and schools. From the school point of view, however, the champions of the Clavier system neglect one important consideration: that is, the fact that most school-boys and school-girls learn the piano as a recreation, not with a view to becoming *virtuosi* or concert players. Consequently, the result in most schools of substituting "clicks" for sounds more or less musical, and that for a period of several months, would be a large decrease in the number of the pupils, a result deplorable both to pupils and teachers.

The Clavier method must, no doubt, be seriously reckoned with as a means of teaching pianoforte technique; but, so far as a young invention can be estimated at present, its chief value would seem to be as a means for correcting faults of technique, due to bad teaching in youth, in the case of students

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who have the energy and the need for correcting those faults later on in life—as, for instance, professional teachers and earnest and leisured amateurs. For ordinary school purposes it would not do, nor, indeed, is it necessary, except perhaps in such cases as that of poor Mr. Davison and the Queenswood School for young ladies.

SOUTH KENSINGTON SCIENCE SYLLABUSES.[1]

THE examination of any class of a school by an outside examining body necessitates the formulation of a syllabus for the guidance of the teacher. Or, if this is not done, it must be possible for the teacher, by an examination of the questions set in previous examinations by the same examining body in similar circumstances, to decide what part of the subject in hand must be introduced to his students and what sections must be passed over as comparatively unimportant. If something of this kind is not done all sorts of complications are likely to arise. The teacher conceivably may lead his pupils through a very satisfactory course of instruction, and the examiner appointed to adjudicate on the value of his teaching may set an entirely satisfactory paper of questions. But there may very well be no points in common between the course of instruction and the test proposed. Such a condition of things would manifestly be unfair to the teacher and his students. It is in this way that the custom has grown up for examining bodies to formulate, sometimes briefly, sometimes in detail, the divisions of the subject to which they attach most importance, and those to which they will invite the attention of the candidates in the examination for which they are responsible.

It is clear, then, that in schools where considerable importance is attached to examinations conducted by outside authorities, a grave responsibility rests with the examiners. What they decide upon will influence the work of the teacher more than anything else. When, as is the case with most of the schools and classes in connection with the Board of Education, South Kensington, for example, the report of the examiners goes a long way to decide what financial aid the teacher and the managers of his school shall receive, it will be agreed universally that every possible care should be taken in drawing up the syllabuses which are to determine the kind and the extent of the teacher's work, so as to avoid the necessity for any revision for some years after the outlines of work have been placed in the hands of the teacher. But what happens in actual practice? Consider a teacher beginning work with a class in any subject of the "Directory." He procures the official syllabus, and regarding it as representing the accumulated wisdom of a number of experts, he sets about drawing up a course of lectures and demonstrations inspired by the order of treatment of his paper of instructions. If he is an earnest teacher, and most teachers are when financial questions are involved, his course of lessons will be his best with the experience he has at the beginning of the course of work. But as the lessons proceed his experience broadens Moreover, he attends meetings of fellow teachers, he reads, he listens to occasional lectures by men of eminence in his subject, in a thousand and one ways he adds to his experience, and throughout he applies it to the syllabus to which he has to teach. His syllabus represents his marching orders. It is not difficult to understand that his work during the second session that he teaches under the guidance of his syllabus will be marked by a great improvement. And so year by year he goes on improving his course of lectures and his series of experiments to exemplify them, and students get more and more benefit by attending his class.

But if, not appreciating the conditions under which the teacher is doing his work, the examining authorities do not take the necessary pains to make the syllabus for which they are responsible the best that is possible, and continually tinker with its contents, sometimes "revising" it past recognition, at others leaving out important parts or adding new sections, the teacher's work is in a continual state of flux, he does not year by year develop his scheme and his powers, but, owing to the stress of official demands, he is for ever learning how to present new subjects instead of learning by experience the best method of introducing the broad principles of the branch of study with which he is concerned. After all, though scientific knowledge is being continually increased, it is only at long intervals that the fundamental parts of the subjects of science with which our schools and classes are concerned require to be recast. The laws of chemistry, so far as beginners are introduced to them, are much the same as they were five-and-twenty years ago. In physics we still have to teach the same laws of reflection and refraction by light, the same facts as to expansion of bodies by heat, identical truths as to the properties of magnets, and so on through the whole subject. It is the more advanced student who is affected by recent advances. It is not, in a word, because of the march of knowledge that syllabuses are again and again "revised." It is rather because examiners come and go. New brooms sweep clean, and it seems to be inherent in human nature to suppose that change and progress are necessarily the same thing. The fact is that official guides are scarcely the persons to try experiments, at least when their experiments can have no other result than to hamper and obstruct the work of those they lead.

An examination of the new "Directory" of the Board of Education, South Kensington, reveals that nine of the twenty-five subjects of science, with which the last edition of this official publica-

[1] "Directory, Part II." Comprising syllabuses and lists of apparatus, &c., for use in Schools and Classes in connection with the Board of Education, South Kensington, London, S.W. 1901. Price 3d.

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tion dealt, have been rewritten or considerably altered. Four others we find are under revision. Further research brings to light other interesting facts. Practical Mathematics was introduced into the "Directory" for 1898, when a new syllabus was published. The next year a second syllabus, differing from the first in many important particulars, took the place of that of its predecessor, while the programme in this year's "Directory" is not identical with that of last year. In 1896, a new, detailed syllabus in Physiography superseded one which had held good for a number of years. The new course seems to have given satisfaction, and to have resulted in improved teaching of the subject throughout the country, yet the official publication under notice informs us that it is "under revision." During last winter session the Board of Education circulated, after the appearance of the "Directory" for the year, an entirely new syllabus for the first part of their examination in Hygiene, and many teachers have been preparing themselves to teach from that syllabus during the present winter. But, though less than a year has passed, the syllabus as printed in the present "Directory" differs materially from that already in the hands of teachers. Other examples might be given, but enough has been written to show that the South Kensington authorities cannot make up their minds as to the extent and nature of the ground of elementary education in science.

We should be sorry to give the impression that we do not favour the introduction of new syllabuses such as those recently published by the Board of Education; for that is far from our intention. All the new syllabuses are drawn up on more reasonable lines than those they supersede, and they will encourage scientific methods of science teaching. What we do object to are the indecisions of the Board and the unnecessary trouble to which teachers are put by its shifting policy. It is not too much to ask that a new syllabus shall not be published until it actually represents the course of work which has to be followed. There is no excuse whatever for the present irresolute mode of procedure, which suggests that the Board permits itself to be led hither and thither by amateur advisers unfamiliar with the limitations of teachers and students, instead of insisting upon well-matured schemes of work. If a syllabus is issued and is then found to be more or less impracticable, or parts of it are revised or removed within a few months of publication, the obvious conclusion is that the Board has not availed itself of the knowledge and experience of sufficient men competent to express an opinion upon it. A syllabus ought not to be drawn up by one man or woman, nor ought it to be a piece of patchwork consisting of contributions from several people put together without their joint consideration. Every syllabus published by the Board of Education ought to represent the results of the deliberations of a committee of at least ten persons and every experiment or heading in it should have been the subject of discussion. If syllabuses were drawn up in this way instead of the trial-and-error system at present followed, the cause of scientific education would be very much advanced.

Given a good syllabus, and the text-books adapted for the use of teachers and students who follow it will be similarly characterised. The books on physical geography, rhetoric, geometry and other subjects which have appeared in the United States since the committees of the National Education Association reported upon suitable schemes of work for secondary schools, furnish striking evidence of this principle. The reports were accepted as authoritative and permanent and they have influenced the movement of education to a remarkable degree; in fact, it is scarcely too much to say that the best text-books on the subjects named now come from the United States. If the Board of Education took the same pains to prepare its schemes of work, and gave evidence that it knew its own mind, teachers and students of educational methods would look forward to the "Directory" with more pleasure than they do now; for the apparently capricious character of the syllabuses is a worry to the former and a source of perplexity to the latter. In any case vacillation is an undesirable characteristic, and it is particularly to be deplored in a Department which practically governs the character and scope of the elementary scientific education of the whole country.

A SUMPTUOUS DATE-BOOK.[1]

MESSRS. CONSTABLE have rapidly won a reputation for producing books in a magnificent style, and on the present work, though it is merely a useful compilation, they have lavished almost as much pains as if it were a Shakespeare or a Boswell. It is a huge "oblong quarto" (about 16 × 12 inches), printed on thick paper, containing not only 158 pages of tables, chronological and genealogical, but also seven pages of maps reproduced from the "Oxford Historical Atlas," and altogether weighing about six pounds. The cumbrous size and inordinate weight of the book are due to the fact that it is a deal more than a "time-table": it not only shows (much more clearly than most "time-tables") when things happen, but also gives much information about the things. All these "extras" greatly enhance its value for use in the study or class-room; but the size and weight combine to make it an impossible book to carry about to lectures, where it would be equally valuable. In fact, the utility of the book would be—let us be modest—quadrupled if it were also available in parts, bound in something limp and durable which one could carry about easily. If only lecturers in history—whether in schools, or at the "studious" Universi-

1 "Time-table of Modern History, 400-1870." Compiled and arranged by M. Morrison. Pp. 159 + vii. (Westminster: Archibald Constable & Co., 12s. 6d. net.

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ties, or among Extensionists—would cease dictating unpublished books, and set themselves to show in a clear and interesting fashion the significance and interconnections of the bare facts so distinctly tabulated on these pages, what a vast quantity of wasted ink, illegible note-books, and boredom would be saved!

The book as it stands falls into six main divisions: (1) 138 pages of chronological tables, arranged across pairs of facing pages, in from six to fourteen columns, each dealing with one definite country; (2) six pages of genealogical tables (very nice to look at, but much less detailed than is required in a work of reference); (3) four pages of lists of kings (each list being independent, not synchronised); (4) a large folding chart of ancient and modern history (no better and no worse than its many predecessors); (5) an index consisting of nine five-column pages; (6) ten maps (one of the seven map-pages containing four maps). Altogether, it is a varied and attractive bill of fare; the materials are for the most part wholesome as well as appetising; and it is very well served; but some of the company at table (*e.g.*, the present writer) would rather not have the dessert—*i.e.*, the maps. It is true that they are well selected and well produced (but were the Spanish Netherlands left within the Empire after 1648?); but it is easy to get a more serviceable collection in a separate and more portable volume for about 2s. 6d.; and, on the whole, the tables by themselves would be better value for half-a-guinea than the whole book, as it stands, is for 12s. 6d. net.

Turning from the form and contents of the book to its manner of execution, we here also find much more worthy of praise than of blame. There are, of course, bound to be slips, omissions, and unevenness in a work covering so vast a field; but, on the whole, the author has planned the work with great skill and carried it out with commendable accuracy. Whether Miss Morrison has done the whole of the work herself or not—there is no preface to explain how or why it came into being—she deserves very warm praise for the courage and patience with which she has performed a work of enormous difficulty (the present writer has often tried it) and of very great practical value to the student of history.

In a word, the book is worthy of one who bears the name of the biographer of S. Bernard and the author of "The Service of Man."

A First History of England. By C. L. Thomson. Part I., 330 B.C.-1066 A.D. xiv. + 191 pp. (Horace Marshall.) 1s. 6d. net.—This is a book written by a headmistress for her pupils, to supplement the oral teaching of her class. It is clearly printed, well and abundantly illustrated, and contains an index. The language is largely based on the old chronicles, and there are extracts from poems. It is a very good bit of work. We note once an "Emperor of Germany," and we are told that the "Angles" are only one of three divisions of the "old English." These things puzzle us, but they are the only instances of anything with which we should disagree.

THE MORAL AIM IN AMERICAN EDUCATION.[1]

IF in these days of organised travel a native of Mars, conducted by the beneficent Mr. Cook, wishes to know what it is that makes English Education a byword for wastefulness and contention, he will do well first to read the accounts of the proceedings of the new, that is, the Education section of the British Association for the Promotion of Science, and then turn to Mr. Mark. For Mr. Mark has written a useful, and even, in essential matters, a good book, bearing in a very special degree on the present situation. It has its faults, and these will be duly noted; but it deserves the warmest praise for bringing together a number of very significant observations and for pointing the moral of English incoherence of aim and indefiniteness of procedure, without any angry tilting.

Mr. Mark went about "the States" asking active organisers of practical education and active teachers *what* they would be at and *how* they were getting at it. He was able to secure luminous and illuminating answers to his questions, not merely because American education is more self-conscious than English education, but because also, amidst an amazing welter of multicoloured experiments, American educators of all degrees of eminence are extraordinarily disinterested. In the main, they look frankly to the destination of the pupil as their chief proper preoccupation. The prosperity of this or that interest seems to be of far less account in their eyes than the making of the best kind of citizen. It is true that citizenship is not unfrequently interpreted parochially, as we should think it; but the United States are—no, *is*—such a huge organism, that its patriotism is robbed of three parts of its flamboyancy. If we Englishmen only had "half the disease" of our cousins!

It takes one a little time to "catch on" to Mr. Mark's car. It is hardly till we get to the end of his second chapter that we fully understand that he has a missionary purpose, to wit, to reconcile Herbart's practical injunction to let the pupil develop as much as possible on his own lines, with the philosopher's avowed purpose to secure "a balanced, all-embracing, many-sidedness." "Individuality" is a troublesome term to manage, and produces the usual difficulties of ambiguity. Even in the deliverances of such a disinterested educator as Mr. W. T. Harris, who would have such individuality cultivated as will enable a man "to select his vocation intelligently and make a success of it in a *competitive* civilisation," it would suggest that the best we can do is to fight, and the best thing to achieve in life is to come out "top dog," which is surely not what Mr. Harris really means.

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1 "Individuality and the Moral Aim in American Education." By H. Thiselton Mark. 298 pp. (Longmans.

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Mr. Mark asks to what extent genuine originality and invention are made possible in the United States by the various conditions of school organisation, as they affect the immediate directors of teachers, that is, the school-superintendents; as they affect teachers themselves; and as they affect the children. It is a little difficult to speak in respectful terms of the confusion and cross-classification with which Mr. Mark irritates his reader; but that is what he means. We follow his dance through topics suggested as school organisation, methods of classification, collective teaching, school discipline, the teacher himself, the child himself; and under every head he is instructive. The reviewer (who is conscientious, and makes notes) has a sheaf of good things from all these chapters, —but ranged under his own headings. For Mr. Mark has supplied no index. He writes, too, with a thoroughly German discursiveness and a thoroughly American love for an imposing array of phrases. He does not say, for instance, that water tends to find its own level, but prefers to direct attention to "a familiar principle in hydrostatics: where there is no local obstruction, the tendency is everywhere towards the highest level." And he frets one all the more because, as here, he is often making a point of real importance.

He shows how American education is progressing by leaps and bounds not because it is regulated by specialists but because the expert is trusted; and though (in a "competitive" civilisation) the school superintendent is occasionally made the victim of political profligacy, America is the classical home of inspiring official advisers of teachers. Here is a particularly good contrast to our own tradition. It is notorious that until quite recent days it was a settled official English practice to discourage those Inspectors who advised teachers how to "earn" grants. And even now an Inspector holds unorthodox, *i.e.*, unofficial, opinions at his own peril.

In particular, where a very great deal is good, Mr. Mark informs us profitably on the following points: the freemasonry of teachers, their readiness to show each other their best; the devices of class-management; sectional teaching; class discipline; the element of coaxing so suspiciously strong in a maudlin type of modern educationism; the importance of having like teachers for like children, black for black, white for white, native for native; the danger of employing too many specialists; the valuable grain in the chaff of "child study"; and the case for optional or "elective" studies.

He is diffuse, recording unimportant facts regarding his own proceedings with the solemn conscientiousness that guides him in propounding valuable principles; he has written twice as much as he need; he lacks, with so many other writers on education, the sense of humour; but he presents us with a truly valuable book, full of matter and acute observation, pertinent to all sorts of current practical problems in secondary and primary schools alike; and he has done work in the highest degree creditable to himself as a practical man.

SCHOOL MUSIC ABROAD.[1]

IT is during periods of growth that comparisons are most tempting and most instructive. A full-grown man does not habitually compare his height with that of the people about him, whilst the friends of a growing boy love to estimate his growth by comparison with his fellows. The same feeling may be discovered in growing institutions and nations, both generally and with regard to individual pursuits. The habit, therefore, which exists in England of comparing English musical taste and achievement with those of other nations may be taken as a symptom at once of our musical immaturity and our musical progress.

This progress was no doubt in some degree affected by the Education Act of 1870, for since that date it has been difficult for any child of the public elementary-school class to escape some attempt at a musical education. Here, then, is an open field for the institution of comparisons between England and the rest of the world. The comparison which, in the sphere of teaching and organisation, was followed out so lucidly by Mr. Matthew Arnold, has been undertaken in the musical sphere in a business-like and unpretentious way by Mr. Spencer Curwen.

At intervals during a period of nearly twenty years Mr. Curwen has been engaged in making a personal inspection of the methods of teaching singing in continental schools. His investigations have been careful and, so far as was possible from his opportunities, complete. Memory has not been relied upon, but all details have been noted on the spot, figures and facts being obtained always from the teachers. The result is a certain bulk of information possessing considerable interest to English teachers, and, in some respects, capable of suggesting instruction.

Mr. Curwen's well-known leaning towards the Tonic Sol-fa notation will prepare his readers for a good many strictures on teaching conducted through the normal musical notation. His book, in fact, holds out so many challenges to the old-fashioned folk who are still satisfied with the notation which has served musicians from Guido d'Arezzo to Tschaikowsky that some self-control is needed in refusing to pick up his gauntlet. We will go no further, however, than to state that it has been abundantly proved that children in English elementary schools can be taught to read music well and fluently from the normal notation.

The most important point insisted on by Mr. Curwen in his comparison between English and foreign teaching of singing is one which sadly needs pressing home to many of our teachers. It is the need of taking pains to make school-singing really musical. It is almost useless to teach children to sing intervals, exercises and songs correctly, if the tone remains ugly, the pronunciation incorrect and indistinct, and the general result without art or charm. And this state of things is too

[1] "School Music Abroad." By J. Spencer Curwen, Fellow of the Royal Academy of Music. London: Curwen & Sons.

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commonly found in English schools, whilst in most continental schools some attempt is usually made to produce a really artistic result. Mr. Curwen's insistence on this point should carry weight; if so, his book will be of real service.

It remains to commend the interesting and intelligent suggestions at the end of the preface as to methods for familiarising young people with good instrumental music. Let them be taken, he says, to concerts; but, first of all, let them have the themes, construction, and beauties of the pieces they are to hear exhibited to them by competent instructors.

NOTES FOR LANTERN LECTURES.

VI.—King Alfred the Great, and England 1,000 Years Ago.

By F. J. C. HEARNSHAW, M.A., LL.M.
Lecturer on History at the Hartley College, Southampton.

THE following brief notes are intended to furnish hints to those who are preparing to give a popular lecture on King Alfred during the present winter. Messrs. Newton & Co., 3, Fleet Street, London, E.C., have made up the set of slides required to illustrate the lecture. These, together with a lantern if desired, may be hired by those who wish to use them. They should be referred to in ordering as THE SCHOOL WORLD set.

A list of books for the study of the life and times of King Alfred was given in THE SCHOOL WORLD for July last. Since that date the late Sir Walter Besant's little "Story of King Alfred the Great" (Newnes, 1s.) has been published. For a general account of Early England no works can compare with Green's "Making of England" (2 vols., 10s.) and Green's "Conquest of England" (2 vols., 10s.); but those who have not access to these books will find the summary in Green's "Short History of the English People" valuable. Traill's "Social England" (New Edition, vol. i., 12s. net) contains a mass of curious information concerning the period.

Notes.

The main theme, and unifying principle, of the lecture which is outlined below is the contrast between England in 1901 and England in 901. The unknown world of a thousand years ago can be best revealed by contrast with the familiar world of to-day. This "motive" will be most prominent at the beginning and at the end of the lecture, but it should never be lost sight of by the speaker.

A good opening, if it were not made too sepulchral, would be to contrast the magnificent pageant of Queen Victoria's funeral with the burial of Alfred. The lane of battleships, the representatives from all parts of a world-wide empire, the sorrow of some four hundred millions of men, would serve to throw into relief the insignificance of the country over which Alfred ruled, the scantiness of its population, the pettiness of its power.

To fill in the details of the picture of England in those early times a few words may be said about—

Britain at the Time of the English Invasion (Slide 1).—The prevalence of forests and fens should be pointed out; the unhealthiness of the climate; the absence of fields; the Roman roads, villas, (Slide 2) churches, and "castra." The condition of the country at the departure of the Romans might be briefly touched on.

The Settlement and Conversion of the English.—The course of the settlement should be outlined (Slide 3). Then the conversion of the English by Missionaries both from Rome (Slide 4) and from Iona should be described. To this was due the fact that the struggle between the English and the Danes was pre-eminently a struggle between Christians and Heathens. Finally, the process by which the scattered settlements became consolidated into kingdoms should be shown—anarchy, heptarchy (Slide 5), triarchy, monarchy.

The Invasion of the Norsemen and Danes.—First the characteristics of the invaders might be portrayed (Slide 6). Then would follow an account of the successive periods of their attack, viz., plundering raids 787, settlement 855. The portraits of the kings to whom fell the task of resisting the Danes (Slide 7) might be made to lead up to the mention of Alfred.

Alfred's Early Life.—His birth at Wantage (Slides 8 and 9); his visit to Rome (Slide 10); his early education as described in the story told by Asser (Slide 11) are the main themes. The representation of the Early English MS. in the last slide would suggest a few remarks on the language and literature of the period.

Alfred's Three Struggles with the Danes.—There is great danger of spending too much time over these. No part of the lecture is so likely to become "boring." In the first campaign, 871 (Slide 12), the battle of Ashdown deserves description; and the accession of Alfred (Slide 13) should be mentioned. In the second campaign (Slide 14) attention might well be concentrated on the Athelney retreat and the legends connected with it (Slides 15 and 16), together with the Battle of Ethandune (Slide 17) and the important treaty of Wedmore (Slide 18). The last campaigns (Slide 19) could then be passed over with the remark that, though the Danish attack was the most formidable of all, Alfred's preparations ensured its easy repulse.

Alfred's Work during the Periods of Peace.—Particulars of this work must of course be gleaned from the published "Lives of King Alfred." Only the headings can be mentioned here. In a single lecture considerable care will have to be taken to avoid unnecessary detail. First, reorganisation of the Army (Slide 20) and Navy (Slide 21). Secondly, restoration of buildings, erection of monasteries (Slide 22), refounding of London. Thirdly, revival of learning and literature (Slide 23). Finally, encouragement of art (Slides 24 and 25), coinage (Slide 26).

Death and Burial of Alfred.—The Cathedral at Winchester (Slide 27) covers the site of Alfred's first burial-place. Hyde Abbey (Slide 28) was the latest resting place of his remains of which we have any certain record. The church in the slide is near the reputed site. The statue of Alfred at Winchester (Slide 29) by Mr. Hamo Thorneycroft was unveiled by Lord Rosebery on September 20th, 1901.

The Development of Great Britain and the Empire since Alfred's day forms a fitting conclusion to the lecture. The enormous growth in the extent (Slide 30), the advance in learning and increase in the number of books (Slide 31); the change in the composition, size, weapons of the Army (Slide 32); the development of the Navy (Slide 33)—all lead up to a contrast between the positions occupied by Alfred the Great and the great Queen (Slide 34) who died precisely 1,000 years after him. The photograph of the latest reigning descendant of Alfred (Slide 35) marks the end.

Slides.

As above mentioned, Messrs. Newton & Co. have specially prepared this set to illustrate the notes just given. The set can be *hired* as a whole only, though individual slides can be *purchased* separately. The plans of Alfred's three campaigns (Nos. 12, 14, 19) have been reproduced from the "Outlines of the Life of King Alfred" (Gilbert, Southampton, 6d. net) by the present writer.

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1. Map of Roman Britain; 2. Roman baths at Bath; 3. Map of English Settlements in Britain; 4. St. Augustine baptising English converts; 5. Map of the "Saxon Heptarchy"; 6. Danish warriors; 7. Group of English Kings—Egbert, Ethelwulf, Ethelbald, Ethelred, Alfred, Edward the Elder, Athelstan; 8. Wantage—Statue of Alfred; 9. Saxon door at Wantage; 10. General view of Rome; 11. Early English manuscript; 12. Alfred's Campaign, 871; 13. Portrait of Alfred; 14. Alfred's Campaigns, 876-878; 15. Alfred in the Neatherd's Cottage; 16. Alfred dividing the Loaf; 17. Alfred in the Camp; 18. Map of England by the Treaty of Wedmore; 19. Alfred's Campaigns, 893-896; 20. Soldier in the ninth century: 21. Early English Ship; 22. Shaftesbury Abbey; 23. Anglo-Saxon writing; 24. King Alfred's Jewel; 25. Ring of King Ethelwulf; 26. Coin of Alfred; 27. Winchester Cathedral; 28. Hyde Abbey Church; 29. Statue of Alfred at Winchester.

30. Map of British Empire, 1901; 31. Interior of British Museum; 32. The Army in 1901; 33. The Navy in 1901; 34. Queen Victoria; 35. King Edward VII.

CURRENT GEOGRAPHICAL TOPICS.

By Dr. A. J. Herbertson, F.R.G.S.

The Patagonian Andes.

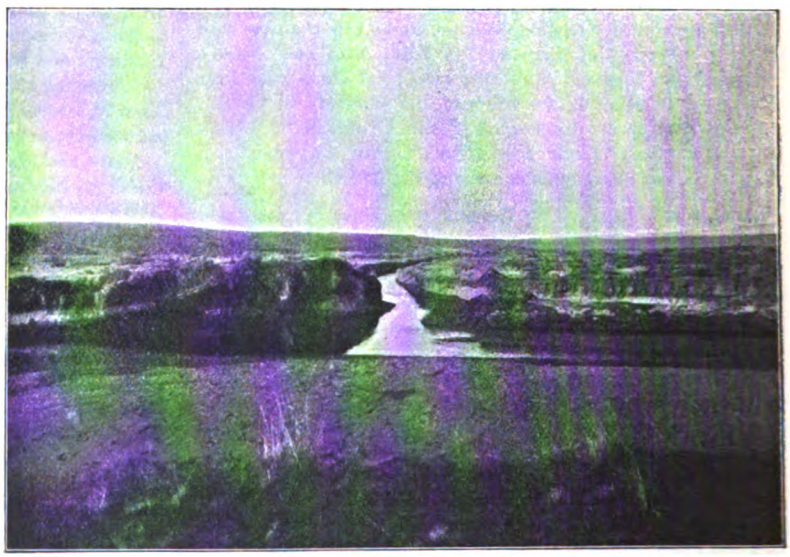
What interest can these out-of-his-world mountains have for the teacher of geography in Britain? He turns up his atlas and finds marked a range of mountains, with a few names he has never seen before, rising above a much indented coast, fringed with a chain of islands, all elongated from north to south. These islands are separated from the mainland by a sound which continues the great valley of Chile, except where the Taytao peninsula is attached by a narrow isthmus. In the mountains are a number of lakes all apparently drained to the Atlantic (this is written with an atlas, dated 1896, in front of me). Noting the latitude, he may say they are probably valley lakes of glacial origin, homologous with the fiords and inlets of the west. To the west of the lakes is drawn a boundary line between Chile and Argentina, along the crest of the Andes.

The treaty between Argentina and Chile fixes the boundary north of 52° S., as the line "joining the highest summits of the Cordilleras which divide the waters passing between the slopes which incline to one side and to the other." Where, then, is the difficulty? The commissioners appointed to delimit the frontier soon discovered it. Diplomatic and legal luminaries are seldom geographers; and in this case they caused endless disputes and great expenditure, because they were ignorant of such a simple fact of physical geography as that the line of maximum elevation is not necessarily the main divide, a fact so well illustrated in the case of the Himalayas, where all the great rivers rise on the farther side of the main range. This is also the case for most rivers of the Southern Andes. Chile and Argentina have had to pay heavily for this information, but geographers profit by their expenditure, for it has led to the investigation of what is the most interesting example of this phenomenon, and of many problems of river diversion and capture in which most geographers are especially interested at present.

On the ordinary atlas we find three great lakes, Nahuelhuapi, Viedma, and Argentino, all drained eastwards to the Atlantic. The other lakes, including the large expanse of Lake Buenos Aires, send their surplus waters to the Pacific across the line of the main chain. Naturally the Chilean commissioner asserted that the main divide was the boundary indicated by the treaty, and as naturally the Argentine commissioner claimed that the main range was the line. The matter has been referred to Britain for arbitration. Each country has prepared a case, and the gist of the case is the geographical facts discovered mainly since the dispute became acute. So acute was it that at one time war was imminent but was ultimately averted. Argentina ordered £1,000,000 of war material, then arbitration was agreed to, and the war material replaced by steel rails, as Dr. Mill relates in his "New Lands."

South from the Uspallata Pass (11,500 feet), above which towers Aconcagua, the Andes consist of one well-marked main chain, which gradually decreases in height and is flanked on the east by a much lower Pre-Cordillera. The first river which crosses the main chain from east to west is the Biobio, which has so long been occupied by Chile that Argentina did not claim it. About 39° S. lakes appear on both sides of the range. On the west they are irregular in shape, and lie in the Chilean valley and form outliers as it were of the Gulf of Ancud, which is the northern end of the long island-fringed sound already mentioned. On the east they are elongated valley lakes resembling those of Eastern New Zealand, or Scandinavia, or of the Scottish Highlands.

The first district in dispute is at 40° S. round Lake Lacar,



The River Fenix, now flowing both to the Pacific and to the Atlantic Oceans.
(From the *Geographical Journal*.)

which is drained to the west across a chain which here rises to 7,410 feet, and whose passes are over 4,625 feet, over 2,600 feet above the level of the lake. Yet to the east of the lake is a plain joined to the Patagonian plateau by a flat, marshy pass, where a main divide is found 2,615 feet above the sea and only 600 feet above the lake. The district bears many evi-

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dences of glaciation, and terraces show that at one time Lake Lacar was much larger and formed part of one sheet of water with the two large valley lakes to the north (Lolog and Huechu Lafquen) both of which are still drained to the Atlantic by the Quilquihue, a sub-tributary of the Limay.

To explain this we must remember the excessive rainfall of the western Andes in this region, probably over 100 inches per annum, while the land to the east has less than 10 inches. The beds of the western rivers are much more quickly deepened than those of the eastern ones. The Hua Hum, which at present drains Lake Lacar, did not at first rise east of the main range. It deepened its bed and ultimately captured an affluent of the lake. The main range was pierced. The bed of the river deepened until the surface of the lake was reached about 660 feet above its present level, to which it has gradually been reduced. The level of the lake is still falling. The erosion on the west of the main divide will be greater than on the east, and at some future time the Hua Hum will capture the Quilquihue, which flows some 20 feet below the present water-parting, and then Lakes Lolog and Huechu Lafquen will also send their waters to the Pacific, and the main divide be shifted further to the east.

That this is not a fanciful theory is shown by the river Fenix, which runs between two lines of moraines, and has been turned to Lake Buenos Aires and the Pacific. "By working eight days with six men," says Dr. Moreno, "we were enabled to send the waters back by their original channel to the Atlantic," and the river is shown in the accompanying illustration flowing to both oceans. Another instance is noted by Dr. Steffen, who found, in 1888, the small Lake Blanca (45° 50′ S.) north of Lake Buenos Aires sending its surplus waters to the Atlantic by a stream to the Chalia, a sub-tributary of the Chico, but in 1896 it had ceased to do so. Lake Buenos Aires itself has at present two outlets, one by the sluggish Deseado to the Atlantic, the other by the torrential Rio Las Heras, which traverses the main range to the Pacific.

Similar explanations may be given of the numerous other lakes that are now drained to the Pacific by rivers which have to traverse the main range. It will be interesting to note the arbitrators' award in this dispute.

MORENO, F. P. "Explorations in Patagonia" (*Geographical Journal*, Sept. and Oct., 1899).

STEFFEN, H. "The Patagonian Cordillera and its Main Rivers" (*Ibid.*, Aug., 1900).

GALLOIS, L. "Les Andes de Patagonie" (*Annales de Géographie*, Mai, 1901).

Based on the numerous volumes submitted to the arbitrators by Argentina and Chile, magnificently illustrated by panoramic views, and with a beautiful map on the scale of 1 : 1,500,000 reduced from that presented by Dr. Moreno for Argentina.

As this number of the *Annales* costs only 4 francs, it is strongly recommended to teachers interested in good illustrations of physical geography, as one of the best they can purchase.

RABOT, C. "Le Conflit Chilo-Argentin, et les Phenomènes de Capture dans la Cordillère des Andes" (*La Géographie*, Avril 15, 1901).

Paragraphs for Paraphrasing. By J. F. Milne. 80 pp. (A. & C. Black.) 9*d.*—The compiler of this serviceable little volume does not explain why he limits his selections (with the exception of those taken from Shakespeare and Milton) to the works of poets who inhabited the somewhat arid spaces of the eighteenth century; he announces the fact, and there is an end of it. Consequently one misses a great deal, and finds it hard to convince oneself that one gains more. There is a sameness about all these extracts which ought to make paraphrasing quite easy when once a start has been made. Still, the selection is handy, and may prove serviceable.

THE FOUNDATIONS OF GEOGRAPHY.[1]

Influence of Relief.

THE view of the scope and content of geography which I have arrived at as the result of much work and some little reading during twenty years is substantially that held by most modern geographers. But it is right to point out that the mode of expressing it may not be accepted without amendment by any of the recognised leaders of the science, and for my own part I believe that discussion rather than acceptance is the best fate that can befall any attempt at stating scientific truth.

Put in the fewest words, my opinion is that

Geography is the science which deals with the forms of relief of the earth's crust, and with the influence which these forms exercise on the distribution of all other phenomena.

Granted that such influence is exercised, some objectors may urge that geography has nothing to do with the matter, and we are compelled to acknowledge that the meaning and contents of geography are in this country as variously interpreted as the colour of the chameleon in the traveller's tale. Yet my thesis is that it is just this relation between the forms of the solid crust of the earth and all the other phenomena of the surface that constitutes the very essence of geography.

It is a fact that many branches of the study of the earth's surface which were included in the cosmography of the sixteenth century, the physiography of Linnæus, the physical geography of Humboldt, and perhaps even the *Erdkunde* of Ritter, have been elaborated by specialists into studies which, for their full comprehension, require the whole attention of the student. Geology, meteorology, oceanography and anthropology, for example, have been successively specialised out of geography: but it does not follow that these specialisations fully occupy the place of geography, for that place is to coördinate and correlate all the special facts concerned so that they may throw light on the plan and the processes of the earth and its inhabitants. Geography, in fact, is concerned with the results, not with the processes of the special sciences, and the limits between geography and geology, to take a single instance, are to be drawn, not between any one class of phenomena and another, but between one way and another of marshalling and utilising the same facts. This was clear to Carpenter in 1625, though we have almost forgotten both it and him.

The science of geography is of course based on the mathematical properties of a rotating sphere; but if we define geography as the exact and organised knowledge of the distribution of phenomena on the surface of the earth, we see the force of Kant's classification, which subordinated mathematical to physical geography. The vertical relief of the earth's crust shows us the grand and fundamental contrast between the oceanic hollow and the continental ridges; and the hydrosphere is so guided by gravitation as to fill the hollow and rise upon the slopes of the ridges to a height depending on its volume, thus introducing the great superficial separation into land and sea. The movements of the water of the ocean are guided in every particular by the relief of the sea-bed and the configuration of the coast lines. Even the distribution of the atmosphere over the earth's surface is affected by the relief of the crust, the direction and force of the winds being largely dominated by the form of the land over which they blow. The different physical constitution of land, water and air, especially the great difference between the specific heat and conductivity or diathermancy of the three, causes changes in the distribution of the sun's heat, and as a result the simple climatic zones and rhythmic seasons

[1] Abridged from an address, delivered before the Geographical Section of the British Association, by the President of the Section, H. R. Mill, D.Sc., LL.D., F.R.S.E., F.R.G.S.

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of the mathematical sphere are distorted out of all their primitive simplicity. The whole irregular distribution of rainfall and aridity, of permanent, seasonable and variable winds, of sea-climate and land-climate, is the resultant of the guiding action of land forms on the air and water currents, disturbed in this way from their primitive theoretical circulation. So far we see the surface forms of the earth, themselves largely the result of the action of climatic forces, and constantly undergoing change in a definite direction, controlling the two great systems of fluid circulation. These in turn control the distribution of plants and animals, in conjunction with the direct action of surface relief, the natural regions and climatic belts dictating the distribution of living creatures. A more complicated state of things is found when the combined physical and biological environment is studied in its incidence on the distribution of the human race, the areas of human settlement, and the lines of human communications. The complication arises partly from the fact that each of the successive earlier environments acts both independently and collectively; but the difficulty is in greater degree due to the circumstance that man alone amongst animals is capable of reacting on his environment and deliberately modifying the conditions which control him.

It seems to me that the glory of geography as a science, the fascination of geography as a study, and the value of geography in practical affairs, are all due to the recognition of this unifying influence of surface relief in controlling, though in the higher developments rather by suggestion than dictation, the incidence of every mobile distribution on the earth's surface.

Divisions of Geography.

Following out this idea, we are led to a classification of the field of geography in a natural order, in which every department arises out of the preceding with no absolute line of demarcation, and merges into the succeeding in the same way. This classification, it is necessary to note, is not like a series of pigeon-holes, which may be placed in any arbitrary order, but like a chain, in which the succession of the links is essential and unalterable.

Since form and dimension are the first and fundamental concepts in geography, the first and basal division is the *mathematical*. Mathematical geography leaves the earth as a spinning ball lighted and warmed according to a rigid succession of diurnal and annual changes. This merges into the domain of *physical geography*, which involves the results of contemporary change in the crust and the circulation of the fluid envelopes, with the resulting modifications in the simple and predictable mathematical distributions. This division falls naturally into three parts: geomorphology, dealing with the forms of the solid crust and the changes they are undergoing at the present time; oceanography, dealing with the great masses of water in the world; and climatology, dealing with the effects of solar energy in the air. But all three spheres—lithosphere, hydrosphere, and atmosphere—are so closely interrelated that no one of them can be studied without some preliminary knowledge of the others. This forms the largest and most important part of geography, more varied and intricate than the mathematical, better known and more definite than those involving life.

Bio-geography, the geographical distribution of life, arises directly from physical geography, which dominates it, but it is full of complex questions which involve the biological nature of the organism and the influence of physical environments, in which geographical elements, although predominant, do not act alone. Difficult as some of the problems of the distribution of life are at the present day, the remains of living creatures found fossil in the rocks, and the survivors of archaic forms still lingering in remote islands, supply us with our only instrument of research into the geography of past ages, often making it possible to lay down the areas of land and water in earlier geological periods.

The relation of man to the surface of the earth detaches itself from the rest of bio-geography by the number of exceptions to general laws of distribution and by the human power of modifying environment. It has necessarily been formed into a special department, *anthropo-geography*. In primitive man the control exercised by environment is nearly as complete and simple as in the case of the lower animals; but with every advance in culture fresh complications are introduced. The relation of people to the land they inhabit, the choice of sites for dwellings and towns, the planning and carrying into effect of lines of communication, are all obviously much under the control of land form and climate. When people get settled in a favourable position they usually become attached to it; they acquire, one may say, the colour of the land, in modes of thought as well as in manner of life. The poems of Ossian, and the Crofter Question, require for their elucidation a knowledge of the geographical conditions of the Western Highlands, just as the Border ballads and the Border raids were largely conditioned by the geography of the Southern Uplands.

Attachment to the native valley or the native fields leads to the holding of land by clans or tribes and the fusion of tribes into nations, while changes in physical conditions stimulating migration from a deteriorating country may lead to the invasion of settled territories by homeless hordes. Here anthropo-geography buds off the subdivision of *political geography*, which takes account of the artificial boundaries separating or subdividing countries, and of the innumerable artificial restrictions and ameliorations which are superimposed on the natural barriers and channels of intercommunication. Even in political geography only a humble place is held by a statement of boundaries and capitals, to lists of which the great name of geography has actually been confined by people who ought to have known better.

Anthropo-geography views the world from the standpoint of the race, political geography from the standpoint of the nation; but room has to be found for a yet more restricted outlook, that of the individual, whose view of the world as it profits himself is known as commercial geography. This department deals with natural commodities and their interchange, and perhaps because here rather than in the other departments a successful comprehension of the inter-relation of cause and effect may be, in the language of the schoolroom, "reduced to pounds, shillings and pence," the name of "applied geography" has been proposed. It fitly terminates our survey of the science, for the flickering disturbances of the equilibrium of supply and demand known simultaneously over the whole world, and the slower movements of transport to restore equilibrium, are still far from the power of scientific prevision, and all we can do at present is to point out certain clear lines of least resistance, or greatest advantage, due to the interactions of natural and human causes and effects.

To sum up in a sentence the field and the function of geography in the broad majesty of its completeness, we may say that it is the description of the surface of the solid earth as it is in itself, as it acts upon the ocean, the air, and the living things which inhabit it, and as it is affected in turn by their actions.

Viewed thus, I believe that geography will be found to afford an important clue to the solution of every problem affecting the mutual relations of land and people, enlightening the course of history, anticipating the trend of political movements, indicating the direction of sound industrial and commercial development.

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THE SCHOOL PULPIT.

NOTABLE PASSAGES FROM SERMONS PREACHED IN PUBLIC SCHOOLS.

Right Reasoning.[1]

LET us ask what is meant by right reasoning, and how it is to be acquired.

There are four points at least which must be mentioned if we are to form a tolerable conception of what is needed.

First, a man must understand what is meant by proof. The mass of uneducated men, as we have seen, are like children in their inability to see when an argument is sound or the reverse. Some of us can remember the difficulty with which we learned to understand proofs so simple and unquestionable as those of Euclid. Many of us even now find that a chain of reasoning about any abstract question, or even about an historical incident, slips through our grasp like sand. Those who have gained most power to reason can best realize how slowly it grew up in them, and how largely the power is due to the training of school teaching.

Secondly, a man must be able to see the force of objections. That is a higher stage. You may have learned to follow an argument step by step, and yet be quite unable to deal with an objection, or even to see whether it has real force or not. This is to be under the influence of prejudice. Probably no man ever attains such perfect fairness of mind, such entire freedom from prejudice, that he can do full justice to the arguments on both sides of every question. But there is a wide difference between the man who feels it a duty to try to see both sides in every case and him who, having once mastered the argument in favour of one view, is incapable of believing that there is another. Here, again, the training of school is a training for life. When you are discussing the date of some ancient battle, or the authorship of some ancient book, the issue which is really at stake is not merely your opinion upon that question, but your power in the future to judge fairly between opposing interests, or to sacrifice your own prejudices to the truth, or your own claims to the rights of others.

Thirdly, a man must understand what kinds of proof are possible in different spheres. Human life is made up of many elements, and they must all be taken into account when we are choosing a course of action. If you are accustomed only to one sort of reasoning, you must often be at a loss. No amount of geometrical proof will show you how to make oxygen. No practice in experimental science will teach you the canons of poetical style. The widest knowledge of literature will not enable you to solve a problem in political economy. Each sphere of knowledge has its own rules of evidence and no others will avail there. The man who has only one measure to apply to the world will find many objects incommensurable. And so the specialist in knowledge is likely to be a pedant in action and judgment.

That is why so much of the popular cry about useful knowledge is mischievous nonsense. Knowledge is useful in itself, but the chief use of learning in youth is to develop the judgment, upon which the conduct of life depends. Whether you are writing Latin prose or solving equations, whether you are making gases or reading Shakespeare, you are not merely accumulating knowledge; you are learning how to deal with the problems of life, how to judge and how to act. If you are doing all these things impartially and seriously, you are securing yourself for the future against the ineptitude and the superstition which are the diseases of a one-sided education.

Lastly, man must understand that the chief value of reasoning is not criticism, but construction. There are men who pass all the other tests but fail in this. Having read much, and thought much, but taken too little part in active life, their eyes are so keen to discern defects in methods or systems that they cannot look on to the goal to which these are but means. They forget the maxim of the great Greek philosopher, that the end of knowledge is action. They forget that all human works and efforts must be imperfect, and while they are looking for some impossible perfection the time of action goes by. The academic mind which suffers from the paralysis of criticism is a pain to itself and an obstacle to others.

These reflections alone are enough, surely, to make us feel the vast importance of using our reason aright, the urgent duty of so training it in youth that we may not suffer from one or the other of these four failings. It is a duty to ourselves, but it is also a duty toward God. When Isaiah describes the Spirit of the Lord, he calls it the spirit of wisdom and understanding. When St. Paul, in the First Epistle to the Corinthians, enumerates the gifts of the Holy Spirit, he places wisdom first and then knowledge — both of them before miracles and tongues. And so it is. The power to reason is God's distinctive gift to man, which makes him man. To misuse this gift is to sin against Him, to neglect it to quench the Spirit. But he who makes full use of the gift of reason, who feeds it with knowledge, exercises it with various kinds of training, and consecrates it by application to noble uses—what shall his reward be? "Well done, good and faithful servant: thou hast been faithful in a few things; I will make thee ruler over many things: enter thou into the joy of thy Lord."

[1] From a sermon preached to the boys of Clifton College by the Headmaster, the Rev. M. G. Glazebrook, M.A. The sermon is printed in full in "Prospice," published by Messrs. Rivingtons. We are indebted to the author and publishers for permission to reprint this selection.

THE SCOPE OF THE SCIENCE OF EDUCATION.[1]

AT the outset of the work of the Section of Educational Science it is of extreme importance that we should come to some working agreement about its scope. There is grave risk of our being overwhelmed by a multitude of interesting problems, some of which cannot properly be attacked before we have settled our procedure and arranged our topics in some sort of order of priority and proportional importance. In that case our discussions are likely to be no more convincing than the debates of the many scores of clubs and societies which are already pouring out an endless stream of papers and treatises on educational subjects. We must begin with the matters which are most fundamental and central, and leave for a while those which are subordinate and marginal.

We start with the claim that there is such a study as the science of education. A study does not become a science until it is systematic, orderly and continuous; until the field of its investigations is marked out; and until the terms which it uses are defined with some precision. Until this point is reached everything remains a matter of opinion and prejudice, and no genuine advance in thought is possible. We must admit that this point has not yet been reached in the British study of education, and it is the difficult and responsible duty of this Section to attempt to place our study upon an objective and truly scientific basis.

The necessity for a scientific study of education has been brought home to the British Association by the force of events. Discussions have arisen from time to time in the various Sections as to the true methods of teaching different subjects of science. In the Section of Chemistry much valuable work has

[1] Abstract of an address delivered before the Educational Section of the British Association at Glasgow, by Prof. H. L. Withers.

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been done, under the lead of Prof. Armstrong, by means of a committee working in co-operation with practical teachers. Much also has been accomplished by the Geographical Section for the reform of methods of instruction in geography.

There can be no doubt that this plan of teaching education in separate departments makes an admirable introduction to further investigation, but it is clearly inadequate in scope and faulty in method unless it be carried into a much wider field. To begin with, the different Sections of the Association only touch a small part of the whole sphere of education. They leave out almost all that is implied in the training of the character and the feelings, the cultivation of the power of expression through language, and the enlargement of sympathy that comes through the study of literature. Secondly, such a method of dealing with single subjects by themselves is unsound both in logic and in practice. The practical schoolmaster is attacked by specialists in an endless number of subjects, each one of whom demands that his own speciality shall be taught, and taught thoroughly. The schoolmaster cannot possibly teach them all; he must make some selection among them. On what rational grounds is he to do this? His school time-table shows his practical answer; he divides the twenty-five hours a week which he has to distribute among the different parts of the curriculum in certain proportions, giving, let us say, five hours to mathematics, two to history, five to the study of the mother tongue and its literature, and so forth. If he has any well considered and intelligible account to give of his time-table, that account must be rendered in the terms of some theory of the comparative importance of the various subjects to his pupils. This implies some conception of an ordered system of knowledge as a whole, quite apart from the individual claims of specialists. This theory of the curriculum is an important part of the science of education. Again, if we turn to the question of methods of instruction we cannot solve the problems which they raise by referring to the different subjects in isolation. For instance, are we to teach geometry demonstratively in the method of Euclid, or concretely and through physical applications? We can get no sure answer by appealing to the mathematical specialists. They will tell us that it depends what our object is in teaching geometry; what mental powers we wish to train; what later applications we intend to make of the geometrical faculty when acquired. That is, we find ourselves referred partly to a consideration of the total aim and purpose of our education and partly to its technical bearings. And these are not mathematical considerations at all. Similarly, if we are asked how we are to teach a language, let us say French, we cannot give a satisfactory answer in terms of French linguistic science alone. We must reply that it depends upon our *purpose* in teaching French, whether, that is, we desire to make it a key to knowledge of one of the foremost literatures in Europe, or whether we desire to give a power to conduct commercial correspondence in French, or whether we aim at both of these ends and many others that might be named. There is no such thing as a method in the abstract. A method is a means to an end, and varies indefinitely in relation to that end.

It is clear, therefore, that the science of teaching is not the same thing as the teaching of science. The study which belongs to the new Section must be, in a sense, independent of the subjects studied in the other Sections, although, in another sense, it is closely bound up with them. The great work which the Section can do is to introduce some kind of order into the confusion which rages at present in educational controversy. It can achieve this only by simplifying and concentrating its field of work, by defining its scope, and by aiming at an orderly and systematic treatment of its main topics.

We may best arrive at an idea of the scope of educational science by considering the following questions: What is it that the educator should study and practise apart altogether from the two or three departments of knowledge in which he may happen to be a specialist? What are the chief topics in regard to which he ought to seek after clear ideas and sound action?

We must begin, must we not? with a rough working definition of education itself. Education is a living process in virtue of which the partly developed young of the human species are adjusted by nourishment and exercise to the environment in which, when fully grown, they will have to continue to live. That environment is partly physical and partly human.

Healthy activity in relation to nature and man may serve as a working definition of our end, and in order to obtain this for children we must aim at clear ideas about the following points:—

(*a*) Physical health in the home and in school.

(*b*) A sound correspondence, implying health of brain and nerves, between the mind of the child and the natural phenomena which surround it, and which form the background of human life.

(*c*) A cultivation in the child of human sympathy with the community of which he is to form a part; a power to express that sympathy in clear language; an understanding of human nature and of the art and literature in which that human nature has most characteristically embodied itself; some knowledge of human history and of the gradual process by which mankind has attained to the position in which we find it. All this must be accompanied by constant habituation to healthy activity with other human beings in the social relations of home and school.

These appear to be the indispensable conditions of adjustment of the growing child to his environment. To aid that adjustment it is evident that the educator must clear up his ideas on many points. Of these the most important and most central might be specified as follows:—

(i.) The hygiene of human growth, with special reference to the healthy functions of growing brains and nerves.

(ii.) The theory of the curriculum, which must include a consideration of the comparative value for growing children of different subjects of study, and of the order and mutual relation in which these subjects should be presented to the adolescent mind.

(iii.) The theory of method, which must embrace a study of the conditions under which the maximum of mental and moral activity can be attained without overstrain. It will therefore comprise an investigation into the symptoms and causes of brain fatigue. It will consider the circumstances under which the interest and self-activity of children are best roused and maintained. It will require a series of practical experiments conducted by trained observers under the ordinary conditions of school life.

(iv.) The study of the conditions under which desirable qualities of character are produced, such, for instance, as courage, kindness, initiative, firmness of will, and the like. Under this head would come the scientific study of play, of imitation, of the influence of suggestion, and so forth, as well as of the influence of the school community and school institutions.

In these four topics, which may be summed up as physical and mental hygiene, the theory of the curriculum, the theory of method, and the theory of character, might be found a rough working scheme of the scope of educational science. When we have arrived at some sort of agreement upon them we shall have

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to consider the forms of administration and organisation most likely to foster desirable conditions. For this we shall need a comparative study of educational institutions, including those of foreign nations and those which have existed in the past. After this we may proceed to the corollaries and riders of our main topics, such, for instance, as the problem of how best to prepare children for particular trades and professions, such as engineering or law, and in especial how to train those who are going to be educators for the effective practice of the scientific principles of their profession.

ITEMS OF INTEREST.

GENERAL.

THE impetus that has been given to the intelligent study of Modern Languages by the action of the University of London in requiring a *vivâ voce* test in all its examinations (after matriculation) in which Modern Languages take part has already been referred to in these columns. This test consists of reading a short French extract and answering a few questions on it. For Intermediate Arts Pass candidates the extract consists of a piece of ordinary historical narrative, on which questions can be founded; but for all candidates for whom any special historical or literary reading is set, the extracts are taken from the subjects they have read. It is difficult for a student to acquire the requisite facility of expression in England, and we hope to see soon an extension of the system of giving small bursaries to selected students in order to enable them to spend part of their summer holidays abroad. Certain County Councils do this already, and there are also a few travelling scholarships for longer periods to be gained at certain colleges. Every French class working under Technical Instruction Committees of County Councils ought to be endowed with one or more small bursaries to enable the most promising student of each year to supplement his nine months' theoretical work with a few weeks' practical study. It should not be difficult to frame regulations so as to prevent these small scholarships falling to those who are able to go abroad at their own expense. In fact, none of the money need pass through the student's hands, as he could be handed his railway ticket and his residence could be paid for at a selected centre.

THIS year's general report by the Inspectors of the London School Board has given rise to a great deal of discussion of a somewhat heated nature. The Inspectors raise two questions of the highest importance. They suggest that the abolition of individual inspection has resulted in a want of thoroughness in the teaching, especially of arithmetic, spelling, and other fundamental subjects. They further allege that the relations between the headmasters and their assistants are in many cases far from satisfactory. There exists, it is maintained, in some schools an opposition on the part of the assistants to the legitimate functions of their chief, an opposition which generally takes the form of grumbling discontent rather than open insubordination. The report says: "It is openly stated by head teachers that, owing to the combined influence of assistants, their just complaints may be turned against themselves. It is not unknown for assistants to waste their time in watching their head teachers and in keeping a diary of their minutest doings in school, and then holding them *in terrorem* over their head teachers when the latter have complained of any dereliction of duty on the part of such assistants."

IT is not surprising that not only at the meetings of the Board itself, but at a special meeting convened by the teachers, these charges have formed the text of many speeches. The diminution in mechanical accuracy in arithmetic and spelling is due, the teachers maintain, to the rapid multiplication of subjects in the curricula of the schools which has been sanctioned by the Board, and to the tests supplied by the Board in making promotions among the teachers. Success in teaching "specific" subjects and in preparing pupils to gain scholarships carries far more weight, the teachers say, than thoroughness in teaching "standard" work. Whatever may be the cause of the unsatisfactory state of the teaching of elementary subjects, we are confident that no good would result from any return to the old "payment by result" methods. It would not be difficult to reduce the number of subjects if such a course is found necessary, and the Board can see to it that there shall be no cause for complaint in the method of making promotions. But it must be insisted upon that, in instituting comparisons between the results of "inspection" as compared with "examination," great weight must be given to the value of the increased brightness of school life, and the higher general intelligence of the pupils under the present conditions.

FROM information which has reached us we are led to believe that the Inspectors have in the matter of the relations which exist between the headmasters and their assistants "generalised upon insufficient premisses." We are confident that the great majority of the assistants in the Board Schools of London will fully agree with the remarks of the Inspectors on the absolute necessity for loyal co-operation between the assistants and their chief. The report contains the trite remark that "head teachers are expected to be sympathetic, but yet firm, with their assistants, and the assistants to be loyal to their head teachers." We should have thought it was hardly necessary to inform the Board on such points in the thirty-first year of its existence.

THE Board of Education are, at the request of the Secretary of State for the Colonies, about to select a hundred trained women teachers, with special experience in teaching little children, for special educational work in the refugee camps in South Africa. The teachers will be employed by the Administrations of the Transvaal or Orange River Colony, and their scholars will be chiefly Boer children. The selected teachers will go to South Africa at the rate of about twenty-five per month, the first party starting as soon as can be arranged. The term of the employment will be one year certain, and the teachers will have the option of returning at the end of that period; but the Colonial Office states that for those who are found suitable and wish to stay there will be a prospect of permanent employment. The Administrations will give a salary of £100 for the year's service, together with accommodation and rations in the camps. Second-class passage accommodation to the place of employment will be given, and return passages to those who elect to return at the end of the year.

A CORRESPONDENT sends us the following facts as to the qualifications and salaries of two of the masters in the school in which he is teaching. X. is a London B.A., who received a country grammar-school education, and has had fifteen years' experience of teaching; his salary is £125 (resident). Y. is an old Rugby boy who is an Oxford B.A., and has had five weeks' experience as a master; his salary is £120 (resident). We have reason to believe there is nothing unusual in this proportion. It shows very clearly the small value which headmasters attach to suitable training for secondary schoolmasters, or they think that teachers are born not made. Our correspondent remarks that the only consolation he can find is the parable of the labourers in the vineyard.

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AT a recent meeting of the Assistant-Masters' Association, held at the Mercers' School, Holborn, Prof. H. L. Withers gave an address on "The Professional Training of the Schoolmaster and its bearing on his Professional Status." Though most of the arguments advanced were those with which students of education are quite familiar, it cannot but have a good effect to make assistant-masters consider the subject for themselves. Many masters are quite unconscious of the existence of that science of education of which Prof. Withers spoke, even if their ability to practise the art of teaching grows with their experience. We have often urged the Assistant-Masters' Association to take its part in assisting to build up the science of education by recording the results of experiments and, arranging for the performance, under proper conditions, of new ones, and we trust that this plan of inviting an expert to open a discussion among members of the Association, which is due to the initiative of the Metropolitan Branch, will be followed in other districts.

WITH a view to safe-guarding the interests of the schools the society represents, the Private Schools Association (Incorporated) is taking active steps to increase its membership and to augment its funds. Mr. Henry C. Devine has been appointed Organising Secretary and is to visit different parts of the country in order to form new branches of the Association and to explain to private school principals the objects of the Society. At the terminal meeting of the Association held on November 13th, an address was delivered by Mr. G. C. T. Bartley, M.P., who dealt with the next Education Bill so far as private schools are concerned. Mr. Bartley, whose experience in the old Science and Art Department enables him to speak from personal knowlege, is disposed to give the fullest consideration to the claims of private schools. Interesting speeches were also given by Sir Richard Temple, and Messrs. Kelland and Butler.

Courses of free, public lectures on "The leading principles of Comparative Law and private International Law" have been arranged at University College, London. The lectures, which are being delivered by Professor John Macdonell, are intended for students of political eoonomy and sociology, as well as for lawyers. A prize of £20 will be awarded to the writer of the best essay, on a subject connected with the lectures, who has attended at least two-thirds of them. The lectures are given on Tuesdays at 5 p.m., and commenced on October 22nd.

THE School Board for London recently held an exhibition of science apparatus constructed by teachers and pupils for the purpose of teaching and illustrating experimental science. Among the objects which the Board have in view two may be mentioned. First, the desire to reduce the heavy expenditure on apparatus for the numerous classes held in the schools of the Board; and second, to bring home to teachers the value, as an aid to science teaching, that the construction of apparatus can be made. The exhibition, when regarded as a first attempt, may be pronounced a success. But it is to be hoped that next year an endeavour will be made to separate the work of teachers and pupils, and that something like equal attention will be given to all the subjects of science taught by the Board. While great prominence was given to mechanics, heat, and electricity, the number of exhibits in light, sound, physiography, and botany was in no case more than three each.

WE have already called attention (March, 1901) to the steps taken by the School Board for London to improve the teaching of history in their schools by means of lantern lectures on the local history of the metropolitan boroughs. The Board has succeeded in obtaining the hearty co-operation of all the mayors with two exceptions, and in addition to the free use of the town hall many of the local authorities have placed at the disposal of the Board their local collections of old documents and views. Mr. S. K. Ratcliffe has been appointed to give the whole of the lectures.

A REPORT on the educational progress of the year, presented to the last annual meeting of the American National Council of Education, shows that the gifts to educational institutions in the United States for the year 1900 amounted in the aggregate to about 23,000,000 dollars, and the gifts to libraries not directly connected with schools to some three millions more. Donations of less than 5,000 dollars are not included in these totals, nor are local, State, and national appropriations, nor the ordinary contributions of churches. Mr. Carnegie, recently described by Mr. Rockfeller as one "who has given away more money than any other living man," has been one of the largest contributors to the enormous sum mentioned. Mr. Carnegie's gifts to American education already amount to upwards of thirty million dollars. Among the many notable gifts which have helped to produce so great a total in 1900 those of Mr. J. Pierpont Morgan to Harvard University and of Mr. Rockfeller to Brown University are particularly conspicuous. It is not surprising that American education improves, in the rapid way with which our readers are familiar, when the merchant princes of the States show their belief in the work of the schools in this eminently practical manner.

IN a recent report, drawn up by Messrs. Llewellyn Smith, Pullinger and Chalmers-Mitchell for the Oxford County Council, attention was drawn to the want of teaching of technical and agricultural subjects for boys in secondary schools in the county, and that for girls was considered to be still more meagre. As regards boys, the last report of the Oxford Technical Committee shows that it may be fairly said that, largely owing to the assistance given by the County Council, there are now (not including private schools) at Banbury, Burford, Henley, Thame and Witney, schools or institutions at which a good technical education is given, and at Burford there is an agricultural school. As a consequence of this the standard of general secondary education in the county has risen considerably, though there is still a tract between Chipping-Norton and Bicester for which one or perhaps two schools are required. For girls the County Council at present only assists schools at Banbury and Witney. Much still remains to be done in this direction.

THE annual meeting of the Association of Headmasters of Higher-grade Schools and Schools of Science was held on November 15th, when Mr. E. J. Cox, Headmaster of the George Dixon Higher-grade School, Birmingham, the President for the year, delivered his presidential address. Mr. Cox took for his subject the Parliamentary Paper issued by the Board of Education in August last, containing statistics concerning certain Higher-grade Schools and the conclusions drawn from them by a section of the press. The deductions were, the President said, false and characterised by bitter hostility to higher-grade schools. By a large number of quotations from official reports by his Majesty's Inspectors, Mr. Cox convinced his hearers that schools of the kind represented by the Association were doing an excellent work for the brightest children of artisan parents, without undue overlapping or competition with local grammar-schools. One point of the address deserves to be emphasised. In deciding the place of higher-grade schools in a national system of education they must be judged on their own merits. As Mr. Cox said, "any attempt to deal with the question from the point of view of one class only is a grave public danger." The personal claims of headmasters, whether of grammar or

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higher-grade schools, are of secondary importance; the object of all earnest educationists must be to obtain the best possible education for all classes of the community in the quickest and most effective way.

THE last annual report of the Somerset County Education Committee shows that aid to public secondary-schools under the scheme which has been in operation for several years has made still further demands on the funds at the disposal of the Committee. Except in two cases where special grants are made, the payments take the form of capitation grants of £2 for each day-scholar, and £3 for each boarder, subject to the provision that if any grant is made at all the minimum amount is £100 per annum. The grants are applied, as a rule, to the payment of salaries of assistant-masters in science or other technical subjects, appointed by the governors of the particular school, subject to the approval of the County Committee. The annual maintenance grants amounted last year to nearly ten thousand pounds.

TEACHERS who are responsible for the science lessons of junior classes should make a point of reading the articles in the current number of the *Record of Technical and Secondary Education* on "Nature-knowledge Schemes," by Miss Ethel Webb and Mr. Wilfred Webb. The first article contains an admirable series of well-illustrated object lessons on such simple subjects as: "The story of a bud," "The history of an apple," and "The reminiscences of a loaf of bread." The second contribution gives valuable hints on the arrangement and use of peripatetic museums.

THE Senate of the University of London now issue a *Gazette* under the editorship of the Principal. The first number appeared on November 23rd, and about twenty numbers will be published in the course of the year on alternate Saturdays. The contents of the *Gazette* are arranged under the following heads:—(*a*) Acts of the Senate, containing such excerpts from the minutes of the Senate as the Vice-Chancellor may consider it desirable to publish; (*b*) University Agenda, viz., notices of meetings of Senate, Convocation, Councils, and such other meetings of Committees, Faculties, or Boards as may be forwarded to the Secretary to the Senate for insertion; (*c*) Notices concerning examinations; (*d*) General University notices, including notices of appointed teachers; (*e*) Notices of matters of interest to teachers and students of the University—to be selected by the Principal at his discretion. The price of a single number will be 2d.

THE Teachers' Guild have now a periodical of their own. The first number of the new *Quarterly* consists of twelve small pages containing—a letter from the Chairman of the Council of the Guild, editorial notes, the quarterly report of the Guild, and Prof. Butcher's presidential address.

IN an important paper on "Tendencies in Secondary Education," in the *School Review* of Chicago, Prof. Elmer Brown, of the University of California, considers the relationship of secondary schools and universities. In view of the impending changes in the syllabus for the Matriculation Examination of the University of London, and the appointment of a committee to consider questions of similar scope by the British Association Prof. Brown's arguments have a peculiar appropriateness. We are only able in this place to quote a few sentences. "College faculties should remember that every vote which they pass relative to entrance requirements is legislation for the internal working of secondary schools. Such legislation should at least be based on some intelligent conception of the nature and functions of the secondary school." "The question for college men and secondary-school men alike must be, 'Is this the sort of curriculum which is best for educational purposes in the secondary grades?' and that means, 'Does such a curriculum offer the best way in which the secondary school can present life at its best?'" If our university authorities bear in mind that the subjects demanded from a matriculant have more influence on the work of the secondary school than any other determining factor, they will cease to consider their syllabuses only from the point of view of the university. The great majority of secondary-school pupils do not proceed to college, and it is the height of folly to sacrifice the education of ordinary boys and girls for the sake of a special training for the few who hope to graduate. Give all pupils in secondary schools a broad general education, and the best of them will have no difficulty in tackling the subjects which belong properly to the university.

THE Calendar for the session 1901-2 of the University College of North Wales, which has reached us recently, states "the total cost of living in lodgings and tuition in Bangor averages from £30 to £40 for the session." This should be good news for the impecunious youth anxious to receive college training and to secure a university degree.

THE Civil Service Commissioners announce that an examination for situations as Assistant of Customs will be held in London and various provincial centres commencing on January 21st, 1902. Not fewer than sixty candidates will be appointed on the result of this examination, if so many be found duly qualified. The limits of age are 18 and 21 on January 21st next. The examination will be in the following subjects:—Handwriting, Arithmetic, English Composition, including Orthography, Geography (General), Digesting Returns into Summaries, and copying Manuscript (to test accuracy). No subjects are obligatory. The fee for attending the examination is £1. Entry forms must be sent to the Secretary, Civil Service Commission, S.W., on or before January 2nd, 1902. Assistants of Customs receive a salary commencing at £70 per annum, rising by annual increments of £5 to £105 per annum. There is a prospect of promotion.

SCOTTISH.

FOR the past two years a systematic attempt has been made by the Edinburgh branch of the British Child-study Association to investigate the laws of mental fatigue, and the reaction of the senses on the brain. These experiments are valuable, not only because the results will afford guidance for the treatment of the young, but because the very experiments compel attention to the *individual* pupil, who is too often lost or merged in the generalisation, the *average* boy or girl. The good work done in Edinburgh has stimulated a similar movement in the West of Scotland. Mr. Scougal, H.M. Chief Inspector, commended the object of the Association to the general public as well as to teachers, and on his recommendation a provisional committee was appointed to lay down the nature, extent and conditions of the investigations. The days of empirical teaching, "trial by error," and "muddling through" are surely numbered if, as is probable in the West of Scotland, the subject is taken up with enthusiasm by the majority of the schools.

SIR WILLIAM ARROL, like Sir John Brunner, has been speaking on technical education, and both declare emphatically against technical education *per se*. It is only when it runs side by side with practical training that it is of any use. Sir William Arrol said that his experience was not favourable to technical colleges. He had had dozens of students from such colleges, and not six of the lot proved to be men able to work for their wages. On the other hand, his greatest undertakings had been

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carried through by men who had never been inside a technical college. The ideal training for an industrial career, in his opinion, was a sound general education till the age of 15, then apprenticeship to a trade and attendance at an evening school or technical institute *pari passu*. Sir William Arrol speaks from a measure of experience possessed by few other men, and this definite expression of his opinion, especially when reinforced by that of Sir John Brunner, deserves careful consideration. But even granting the truth of Sir William's sweeping generalisation, it should not be an argument against technical education *per se*, but against the technical education at present being given. Prof. Perry should find here a powerful argument in support of his plea for practical mathematics and workshop methods. Both schools and technical colleges require to revise their methods in view of present-day needs. If that were done, technical education would, as its name implies, be thoroughly practical, and would not be open to the reproaches of our masters of industry.

A DIPLOMA in Education has recently been instituted by the Glasgow University, and the first examination will be held this month. Candidates must be graduates in arts or science, and must have attended the education class in addition to the full number of courses required for graduation in arts or science. Besides a written examination in school management, organisation and method, candidates will be required to give proof of practical skill by conducting a class to the satisfaction of examiners appointed by the University. The diploma is recognised by the Education Department as qualifying the holders for employment in higher-grade schools.

SIR HENRY CRAIK, in opening a new public school in Portobello, replied to some of the criticisms that had been passed on educational methods at the recent meeting of the British Association. Many of the suggestions there urged as novel were as old as Socrates, and had for long been in force in the Scottish schools. He instanced the suggestion that education should not be mechanical, but biological, meaning, he supposed, that it should be a living, active reality. But all their efforts for years past had been in this direction, and had been attended with the happiest results. The whole system of examination had come in for indiscriminate condemnation, but he failed to find one suggestion as to what was to take its place. He readily admitted that examinations had been overdone, and that there had been in consequence an excess of competition and strain, but they must have some way of finding out whether pupils knew a subject or not, and he could see no other way of doing so save by examination.

AN interesting ceremony, which has not been witnessed in the ancient city of St. Andrews for the past fifty years, took place on October 24th, when Lord Balfour of Burleigh, the Secretary for Scotland, was installed as Chancellor of the historic University in succession to the late Duke of Argyll. In his installation address Lord Balfour proceeded to define the broad lines which University reform should follow in order to make them modern in function and responsive to the needs of a progressive people. The course bearing directly upon arts and crafts, and training the aptitude of students for a particular trade, lay within the province of the technical institute. The university course, on the other hand, should aim at a high standard of general attainments. The key note should be culture and not specialisation. Culture, Lord Balfour was bold enough to say, should be an object in itself and must be sought after for its own sake. As a means to this end he made a powerful plea for maintaining classical studies unimpaired.

IN the same address Lord Balfour gave an important contribution towards the solution of the modern-languages controversy, which is so acute in northern educational circles. His lordship believed there was more of agreement than of opposition between the contending views. The classics at their best were the highest means of culture yet known, but the effective command of one modern language was of much more value practically and intellectually than the fragmentary knowledge of a classical language, which was all the great majority of students ever attained. To make modern languages thoroughly effective as a mental discipline and training they must have teachers capable of holding their own in culture and scholarship with the classical teachers. His lordship hoped to see a Faculty of Languages established from among whose students would come the teachers equipped for the commercial side of a secondary school. If this were done, it would not be necessary to seek the teachers of modern languages from abroad. Lord Balfour's proposals will not be satisfactory to the extreme ancients and moderns, but it seems to an unbiassed mind an eminently sane and satisfactory settlement.

WELSH.

A SCHEME has been discussed by the Flintshire County Governing Body for making the St. Asaph School more useful for the pupils of the district, with special relation to the fact that the district is largely agricultural. Denbighshire was asked to join in the movement, and a small committee reported in favour of adding an "agricultural department" to the school so as to give special instruction for such pupils as might intend to proceed to the University College of North Wales, at Bangor, "for higher agricultural education, or intend to follow an agricultural profession as farmer, land-agent, or valuer." It was proposed that general intermediate education should proceed along with agricultural education. We understand that the suggestion was that two-thirds of the time should be devoted to general subjects and one-third to agricultural studies. It was proposed to apply to the Board of Agriculture for an annual grant in aid of the school. The scheme eventually fell through, since Flintshire of itself would not undertake the new departure, and the other counties of North Wales did not see their way to co-operate.

IT has been lately said that in the elementary schools, as well as the intermediate schools, the first problem is the rural pupil. But there can be no doubt that the bringing of the county schools to every district of Wales is opening up a bright future to that class of pupils who have fared so hardly in the past—the rural pupil-teacher. In Wales, small country though it is, there are 95 county schools altogether. The great opportunity, therefore, for the pupil-teacher is that he should be secure of a secondary education before he begins any teaching work. With an education reaching up to matriculation stage such as can be got in any of the county schools, there is the prospect before the rural pupil-teacher of a career of a far brighter kind than has hitherto been open even to the town pupil-teacher. The important matter is to convince school-managers that the pupil-teacher who has spent the two years between 14 and 16 years of age, at the County School, and who has completed his matriculation at 16 or 17, will with teaching for two years be of more value to the elementary school in his teaching work than the pupil-teacher from 14 to 18 years of age, who is engaged in such teaching without any secondary-school preparation. The fate of the rural pupil-teacher depends on his being allowed to avail himself of the new educational opportunities. No irony could be greater than that involved in the supposition that the only youths not to receive county-school education should be those who are to become the teachers in the elementary schools, from which we are told come 70 or 80 per cent. of the scholars of the intermediate schools.

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AT a meeting of the Carnarvonshire County Governing Body a resolution has been passed asking all the governing bodies of intermediate schools in Wales to urge the Central Board to take steps to obtain legislative authorisation for the raising of the ½d. rate to 1d. in the pound, and to ask that the Treasury grant be proportionately increased. It is estimated that this would increase the revenue of the county schools about £2,600 a year. There seems little doubt that, eventually, this will have to be done, if the schools are to be brought up to the high standard of equipment and efficiency which are within their grasp. The strides which intermediate education in Wales has made are remarkable. But the maintenance funds, as the Chief Inspector has pointed out, need increasing, and it is not too much to hope that the other county governing boards will recognise the need as keenly as Carnarvonshire.

THE Bangor Normal College, which was founded by the British and Foreign School Society, has formulated the following statement of its condition of entrance of English students:—"Applicants from England should understand that preference will be given to Welsh candidates, except in the case of those who pass the Scholarship Examination in the first class, provided candidates from England shall not in any year exceed one-fourth of the number admitted." It was reported at the annual meeting that, in accordance with a suggestion of the Inspectors, students of the College had been over to Liverpool to see the working of the elementary schools there. We understand that in the Aberystwyth Day Training Department students of the second and of the third year practise teaching in the elementary schools of Swansea. In connection with the Welsh Training Colleges, we hear that at Bangor and at Cardiff kindergarten shools are established under the direction of the training staff, and that it is intended to train kindergarten teachers in connexion with these schools.

THE establishment of the first School of Law in Wales is announced in connection with the University College of Wales, Aberystwyth. There are to be complete courses in English and Roman Law, and in Comparative Law, and the Philosophy of Law. The Law staff consists of Professor W. Jethro Brown, author of "The New Democracy," and Professor T. Arthur Levi. The institution of these courses will bring forward the question of framing Regulations for Degrees in the Law Faculty of the University of Wales.

CURRENT HISTORY.

THE British Empire is the biggest thing the world has yet seen. It is so big that we are making efforts to decrease it. Not in matter of miles—in that respect we are still adding to our responsibilities—but in practical distance, measured, that is, by time. Swifter steamers, greater telegraph conveniences, are constantly being introduced. But it is still too big, and we note signs of differences between its parts. We have lately seen the birth of "Australia" as a State: our Imperial Poet (not the Laureate) acclaimed her as another "daughter" come to fulness of age. And the new "power" is busy making good her position. To drop metaphor, Australia is making a tariff, which Canada does not like and upon which she threatens to retaliate. Australia is carrying "labour" legislation against which Queensland is protesting, while New South Wales is becoming indignant at the loss of her "free-trade" position. We are reminded of another empire which was so big that the governors of its various provinces sometimes fought one another, through which a Greek army made its way to the sea, and which fell at last through looseness of connection and want of communication between its parts before the power of Alexander the Great. *Absit omen!*

CLOSELY connected, in the nature of her transactions, with the action of Australia, is the recent news from Guiana. The Colonial Secretary, acting for the metro-polis (mother-state), is desirous of developing the interior of that colony, which is believed, on good grounds, to abound in mineral wealth. He recommended the appointment of a Commissioner of lands, forests and mines, to superintend the proposed development. But this would cost the colony £1,000 a year, and those locally in authority, being interested in the sugar industry which flourishes near the coast, and fearing to lose the services of their coolies (who would be attracted "upwards"), have refused to make the appointment. Ancient Hellas knew of colonies which, when once they had been launched on their career, were quite independent of their metro-polis, and even (*horribile dictu*) but rarely, made war on their "mothers." We know, too, if we read our eighteenth-century history with due care, how the habit of appointing governors over the heads of the local authorities was one of the causes of American discontent. With what diligence should our Colonial Secretary study history! With what wariness he should guide his steps! Which is right—the broad or the narrow view? Who can tell?

WE were commenting last number on the love of the "Anglo-Saxons" for talk. It seems that some of our leaders are regarding this proclivity as an evil. Lord Milner "deprecates making political speeches: it seems to him one of the severest handicaps to which English public men are subject, that they are expected to make so many speeches," and the Government proposes next session "to alter the arrangements of the House of Commons so as to enable its business to be done better and to have a better control over the men who tried to degrade it." So we are to have further changes in our Constitution. The House of Commons is to talk less and "do" more. As we make a further advance in our political institutions we look back to see the way by which we have come. And it becomes all the more necessary to improve our historical knowledge. We remember the old conflicts for "freedom of speech" and think of the opposing ideas of the seventeenth century. But we are at war, and we look beyond our own history to that of the little republic which perished, so far as independence was concerned, because they would discuss everything in the "agora," while their opponent, Philip of Macedon, need consult with no one. The Romans in times of danger appointed a dictator. In our time of distress and international complications in Tudor times, Parliament met rarely—and talked little.

RECENT SCHOOL BOOKS.

Modern Languages.

A Notebook of French Literature. By Philip C. Yorke. Vol. I. Middle Ages to Eighteenth Century. xv.+419 pp. (Blackie.) 6*s.* net.—From the preface we see that the author of this "Notebook" is unaware that the plan of giving "brief notes about the writers, and then illustrative specimens of their work" is not new. The *Morceaux Choisis* of P. de Julleville is too good to be thus ignored; for the early period there is the admirable *Chrestomathie* of Paris and Langlois; and for the literature from Corneille onwards we have the *Manuel* of Ploetz. Mr. Yorke hopes his book may prove "shorter, more precise, more instructive and more useful for examination purposes; and of greater literary value, more truly representative of the great French authors and language, more interesting, and perhaps more amusing than some other

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class-books." There certainly are "some" class-books which are worse; but that is hardly sufficient justification for the book. It must stand comparison with all other books of the kind; and this it cannot, we regret to say. Its value for examination purposes we do not presume to estimate; certainly it would not suffice, if a special period is set; and there are fortunately few examinations in which candidates are expected to cover the whole ground. To use such a book on French literature for unseen translation is degrading to the subject. If, on the other hand, a student with literary tastes takes up this book in the hope of finding stimulating suggestions and well-weighed criticisms, he will be repelled by the author's slipshod style and superficial manner. His attitude towards the literature of the middle ages makes us inclined to doubt whether he is really familiar with it; otherwise he would, for instance, hardly have failed to give some specimens of the early drama and of the *esprit gaulois*. But in the remainder of the book also there is much that suggests a complete lack of finer literary qualities: thus we are told of Corneille's style, "there is no artistic filling up, working up, or transition"; *L'Avare* is "the amusing, and also the tragic, picture of the misery experienced by a miser"; the *Esprit des Lois* is "full of grand ideas, and, for a French writer, original ones"; Voltaire died "overwhelmed, like Herod of old, with the plaudits of the mob." If the medieval section were made more representative; if the authors were arranged in a more satisfactory manner, so that, for instance, Malherbe began the classical epoch, and Madame de Staël were transferred to the nineteenth century; if all that is at present in English were rewritten by a more scholarly hand, it might be a useful book.

Lamartine, Graziella. Edited by F. M. Warren. xii.+165 pp. (Isbister.) 1*s.* 6*d.*—In the introduction, Professor Warren gives details of the author's life, discusses his place in French literature, and gives sufficient information about Graziella. The charming story is too well known to require commendation; it will probably be a favourite, particularly with girls who can read French with some ease. There are only nine pages of notes to 154 of text.

Dumas, Montechristo (Episodes from). *Le Château d'If.* Edited by I. H. B. Spiers. vi.+146 pp. (Isbister.) 1*s.* 3*d.*—This text also is well known, and has been edited for school use several times. It is the kind of book to give a boy for private reading; and he should be encouraged to get through it as quickly as possible—if indeed, any encouragement is needed where the tale is so full of startling incidents. The editorial work is satisfactory.

A First German Book. By L. A. Lowe. 88 pp. (Blackie.)—This little book is meant to serve as a first German reader for children of eleven or twelve years of age who have no previous knowledge of the language. It consists of a number of short stories, well printed and with nice pictures which would be more valuable if they represented German people and German scenes. There is a full vocabulary to each piece, as well as an alphabetic vocabulary to the whole book. The stories are in good, simple German; that about the *Kaninchen* is new to us, and quite delightful. A few details may be criticised: *sei*, not *wäre* (p. 14, l. 14, and p. 17, l. 3); *habe*, for *hätte* (p. 25, l. 23); word-order (*dicht am Bären*, p. 17, l. 2); *nicht alle Kinder* (p. 41, l. 6); *einen* omitted (p. 41, l. 5); the cat on p. 31 ought to be black. It is a pity that the lines are not numbered. The vocabulary is carefully compiled; it would have been well to add the plural of the substantives, and the 3rd singular present indicative where the vowel is not the same as in the 1st person. The book may be recommended to adherents of the translation method.

Paul Heyse, Das Mädchen von Treppi. Edited by E. S. Joynes. vi. + 124 pp. (Isbister.) 1*s.* 3*d.*—It is a little surprising to find that this *Novelle*, charming as it is, should have been specially recommended by the Committee of the American Modern Language Association for students near the end of the first, or early in the second year of the study of German. The fundamental objection to its use in class is that the scene is in Italy, while we want to let our pupils know something about Germany. Apart from this, the subject matter is much more suitable for private reading than for class work. The editor has supplied brief notes, quaintly ending with this sentence: "The concluding lines, in which the surrounding scenery is co-ordinated with the spiritual situation, are beautifully poetic." The vocabulary is good; and there are sixteen short passages for re-translation.

Elementary Lessons in Cape Dutch (Afrikander Taal). By A. Werner and G. Hunt. viii. + 94 pp. (Williams & Norgate.) 1*s.* 6*d.*—This is an unpretentious, useful little book. The grammar of this dialect of Dutch is extremely simple and is well explained here. The vocabulary offers no great difficulty. The dialogues are quite excellent, bright, and eminently serviceable. Indeed, the only weak point about the book seems to be in the rather inadequate hints as to the pronunciation: thus there is little to be gained from such a statement as "*g* is always guttural, like German *ch* or *g* in *wagen* (as pronounced in Southern Germany)."

Classics.

Terra Paterna, Vale. By the Rev. N. J. Brennan, C.S.Sp., B.A. 158 pp. (Dublin: Gill.) 2*s.*—If Latin verses are unduly neglected in English Protestant schools, we are glad to see that our Catholic friends are not so foolish. This book is one of four, which are to contain a portion of Mr. Brennan's exercises made for the benefit of his pupils. Each is to consist of a complete canto of Byron's "Childe Harold," with a translation in Latin hexameters, together with other pieces both translated and original. The level of attainment is good, but the hexameters are monotonous; most of the lines have the end-stop. Still, they are written in good Latin, and are free from modernisms. Mr. Brennan ought not, however, to expect pardon for "want of thorough revision." We should have thought it better to print the whole canto together, not as here in separate pieces with others between. We have no space to criticise in detail, but recommend the book to lovers of Latin verse.

Second Steps in Latin. By F. Ritchie, M.A. 139 pp. (Longmans.) 2*s.*—This book is well adapted for use after "First Steps." It carries the beginner by easy stages, and with plenty of exercises, a good distance on the road of simple accidence and syntax. It is a pity that in a page on the Ablative (86) the word "Dative" has been substituted in one rule; also that some of the spelling will have to be reformed later by the student.

The Fables of Orbilius. Part I. By A. D. Godley, M.A. x. + 56 pp. (Arnold.) 9*d.*—An attempt to express the modern boy's doings and sufferings in Latin, in which process the Latinity becomes somewhat canine. Perhaps this is inevitable; but a solecism in the title of the frontispiece, repeated in the exercise which describes the picture, might certainly have been avoided.

Greek Grammar Papers. By A. C. Liddell, M.A. 105 pp. (Blackie.) 1*s.* 6*d.*—These papers range in difficulty from the standard of the "Locals" to that of University scholarship exams. Without presenting any specially notable features, they are a useful collection to be put into the hands of students.

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The Elektra of Sophokles. By M. A. Bayfield, M.A. xxix. + 163 pp. (Macmillan.) 2*s.* 6*d.*—Why is the name of the author spelt in one way inside the book and in another outside? And why is one kind of Greek type used in the text and another in the notes? Every editor of the poet must necessarily owe a large debt to Professor Jebb. Mr. Bayfield acknowledges his obligation, and the Professor's name frequently appears in the notes. Where other views than his are taken, the editor ably defends his position, and now and again finds Kaibel on his side. Appendices on particles, some mood usages, and metre, and indexes, add to the usefulness of an edition which is scholarly and practical.

In "Blackwood's Classical Texts" we have:—*Cæsar: Gallic War. Books I.-III.* By J. M. Hardwick, B.A. xxxv. + 171 pp. *Books VI. and VII.* By C. A. A. Du Pontet, B.A. li. + 188 pp. *Horace, Odes, I. and II.* By J. Sargeaunt, M.A. xxviii. + 153 pp. *Virgil, Æneid, V. and VI.* By St. J. B. Wynne Willson, M.A. xviii. + 160 pp. 1*s.* 6*d.* each.—The presence in this list of different editors of different books of the same author shows the diversity in unity which characterises the series. There is one point, however, where uniformity would be desirable, and that is in spelling. Cannot the general editor, for instance, insist that *u* and *V* shall alone have place, instead of *v* and *U*? Mr. Sargeaunt is a sound commentator, and his views on Od. I. 28 are probably correct. For the rest, if originality is not found, it is not expected; the books will be as useful as the others of the series.

Edited Books.

Gaspary's Italian Literature. Vol. I.: To the Death of Dante. Bohn's Libraries. Translated by Dr. Œlsener. 414 pp. (Bell.) 3*s.* 6*d.*—The question started at the outset of this volume by the learned author's complaint certainly deserves more consideration than it usually receives, Why do Italian studies not make more progress? Dante, one solitary, albeit a commanding, personality absorbs nine-tenths of the attention given to them. If Dr. Garnett's recent volume on the subject had not already proved scarcely stimulating enough to awaken a wider interest in this seductive literature, this book of Herr Adolf Gaspary's might have been expected to do so. It is a remarkably lucid and intelligent exposition of the development of a highly interesting theme; and it has secured the doubly good fortune of a translation into English which makes it absolutely delightful reading, and a place in a series of volumes so well known for their solid serviceableness that he would be a dullard indeed who could under-estimate the importance of its auspices. Anything like an adequate notice of this volume would run to a great length, which is in the circumstances not permissible: a second volume is, however, to be prepared to deal with the development of Italian literature after the death of Dante, and thus the whole field will be covered with a completeness which leaves the scholar nothing, and the general student little, to desire. Herr Gaspary's treatment of the mediæval Latin literature is a chapter that ought to interest the student of later Latin quite as much as the Italian scholar proper; but his sketch of the rise of poetry, with its triple divisions of Sicilian, French and Central schools all comprehended in the Italian peninsula, is a matter in which he compels a reader to take a very keen interest. The sketch of prose literature in the thirteenth century is admirably done, and provides a storehouse of suggestions; and, indeed, the portion of this work which deals with the period anterior to Dante is much more interesting than the account of Dante himself, of whom accounts like that furnished in Messrs. Dent's shilling primer are (for educational purposes, at least) much more highly serviceable. An improvement to this volume would be a marginal excursus; but for clearness, and that kind of actual brilliance which can make a recondite subject not unattractive to the general reader, it is beyond praise. The next volume ought to be awaited with eagerness.

Browning's Strafford. By Agnes Wilson. 112 pp. (Blackie and Son.) 2*s.*—As a new sauce to an ancient soup, so is the inclusion of Browning's unfamiliar, and not very coherent, drama *Strafford* among the hackneyed selections that continually get edited with more or less ability for schoolboys and schoolgirls. Moreover, the present editing of this play is as careful and as competent as its selection is gratifying. Miss Wilson has evidently spent not only labour but enthusiasm upon the production of this volume; and in the midst of much that proves her extensive scholarship, careful judgment, and complete grasp of her material, she tactfully omits that wearisome feature which disfigures so many school editions—the critical estimate. For this one cannot be too thankful, although in saying so much the writer does not in the least wish to discredit Miss Wilson's power of producing such a composition. Critical estimates, however adapted to the service of education in its most pedestrian phase, are often a grief and sorrow of heart to a reviewer; and a critical estimate of either Browning or his play discovers what Sir Hugh Evans calls "possibilities." The historical introduction supplied by the present editor is a most able and admirable piece of writing; it leans rather to the monarchical than to the democratic ideals in tone (which no schoolmaster, perhaps, will quarrel with): it displays Strafford's undoubted consistency without commenting upon the obvious disadvantage of consistency in wrong-headedness; and in numerous quotations from Strafford and from Clarendon succeeds in presenting a very vivid picture of everybody concerned in the tragedy of Strafford's fate, except the unlucky author of it, Charles I. Miss Wilson, after admitting his culpability, partially absolves Charles upon four considerations which may commend themselves to a sophisticated conscience, but hardly weigh against the innate duplicity of that misguided monarch. If one might suggest a possible modification of her view by a reading of "John Inglesant," it is possible that, with so much in common between herself and Mr. Shorthouse, she would estimate Strafford no less highly, but Charles at a much lower rate. This is, however, by the way. In all the needful characteristics of a useful edition, the book is admirably adapted to serve its purpose. Two slight errata call for correction. "Land" on p. 43 should surely be "Laud"; and on p. 44 the comma should be omitted between Wentworth and Woodhouse. The two names signify one estate.

Pope's Rape of the Lock. By G. Soutar, M.A., Litt.D. 240 pp. 2*s.* 6*d.* *Selections from Wordsworth, Coleridge and Keats.* By O. D. Innes, M.A. 280 pp. 2*s.* 6*d.* *Select Essays of Charles Lamb.* By Agnes Wilson. 268 pp. 2*s.* 6*d.* *Hazlitt's Essays on Poetry.* By D. N. Smith, M.A. 249 pp. 2*s.* 6*d.* *The George Eliot Reader.* By Elizabeth Lee. 241 pp. 2*s.* 6*d.* (Blackwood's English Classics.)—The foregoing volumes are all found in a series which is now deservedly recognised for its many and high merits, and which comes with each succeeding volume to include valuable literary matter. As a matter of fact, to take these volumes alone, the editorial work has been uniformly done on broad lines, and reaches a high standard, and is certain to appeal to the more cultured among teachers of English. Critical estimates figure largely, but it is just, and only right to say that for the most part this usually unsatisfactory portion of a school edition is remarkably well done in every case. The only exception of note is perhaps Mr. Nichol Smith's somewhat tame summary of the character of Hazlitt. Mr. George Soutar, discoursing upon Pope, however, very nearly reaches the level of pure literary criticism. His article on "Pope and the Classical School" is quite as much above the

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ordinary as are his selections out of the common run; for these include the Epistle to Augustus and also that to Dr. Arbuthnot, and Mr. Soutar's appendix upon the subject of Pope's rhymes is accurate and clear and interesting. The notes to each volume are scholarly and careful, and deal with historical and literary allusions rather than with main points of grammar or philology. A feature of great interest in these volumes is the inclusion of several portraits which are somewhat out of common note, of which perhaps Maclise's sketch of Charles Lamb poring over his Elizabethans by candle light is the most pleasing. The *George Eliot* reader is compiled with most judicious care, though the introductory matter is too modest and scanty for the subject; and this volume is prefaced by the well-known portrait of Marion Evans dating from 1864.

The Temple Girls' Readers. Book V. By M. T. Yates, LL.D. 256 pp. (Dent.) 1*s.* 6*d.*—One is often tempted to wonder what class of literature will soon be left which shall not supply some subjects for this "Temple" series, or that. At any rate, Messrs. Dent have now taken school books under their patronage, and in this instance adapt themselves to the educational needs of girls who (one thinks) would need to be of an instinctively refined order to appreciate this delicate and artistic instance of what a school book may be. All that we are now thoroughly well accustomed to look for in any production of this eminent firm is to be found in this volume. The matter is excellently selected, the ordinary illustrations on wood are fine (particularly a portrait of Hawthorne), but *the* feature of the volume is a series of delicate illustrations in colour. Altogether serviceable, tasteful and charming.

Oral Exercises in English Composition. By C. J. Nesfield. 216 pp. (Macmillan.) 1*s.* 6*d.* *Junior Course of English Composition.* By C. J. Nesfield. 224 pp. (Macmillan.) 1*s.* 6*d.*—Mr. Nesfield in his own line as an author is becoming quite prolific; and inasmuch as his books, one and all, are practical, clear and helpful, teachers of English owe him a steadily-increasing debt. The first of the two volumes noted above is indeed little else but "practice." The examples are multitudinous, for Mr. Nesfield's aim is to begin the teaching of English composition orally, and to mention no more than the total of one hundred and fifty-one varied examples of the use and misuse of plural noun and singular verb, and the care with which even the colloquialisms "ain't," "didn't ought" (that darling of childhood), "don't," are set right, is to show the thorough handling which the author bestows upon his subject. The other volume will be found exceptionally useful to teachers, especially in the second portion, where general hints on written composition are given. This is full and clear, and although probably not one person in ten will ever be able to write good literary English who is not born with a gift for it, the rules, examples and cautions given here will be of immense service in the production of school essays and in letter writing. To this latter important subject Mr. Nesfield devotes a whole admirable section, which concludes a very able and serviceable volume. To only one point can we take serious exception, and that is a minor one. Mr. Nesfield in his preface and in some notes uses the editorial "we," which was once upon a time consecrated to the service of leader writers and the Scottish pulpit. In both cases its use is diminishing, it not expiring, and Mr. Nesfield's rather pompous use of it, in a treatise on style, is difficult to explain.

Carmina Britanniæ. By Clara L. Thomson. 251 pp. (Horace Marshall.) 2*s.* net.—A comprehensive and excellent compilation of poetic illustrations to English history marked by all the thoroughness which we have before had occasion to praise in examining Miss Thomson's previous work. Many unaccustomed names figure on Miss Thomson's table of contents, notably Walter Savage Landor, Michael Drayton, Morton Parker and David Garrick. The liberal tendencies of the compiler's mind are exhibited in the inclusion of poems by Ebenezer Elliott and Gerald Massey; while students of antiquarian tastes will be delighted by contemporary poems galore and old songs in profusion. The Earl of Rochester's witty quatrain on Charles II., and John Byrom's "God bless the King—I mean the faith's defender," impart a spice of delicious humour to an admirable and thoughtful collection of verse.

Samuel I. By G. Carter, M.A. 150 pp. (Relfe.) 1*s.* 6*d.*—This is a volume in which all the interest resides in the notes; so much so that the editor's second thoughts have led him to append "additional" notes rather than to increase his very meagre introduction. Like all the foregoing volumes in this series, it is pre-eminently a book for teachers, and puts an immense amount of matter in an easy compendious form, distinctions of type rendering many main points easy of observation. The section dealing with "chief persons mentioned" is a remarkably able compilation, and the geographical section which follows it is interesting. If this book be well used and never suffered to degenerate into a facile instrument for cramming, it ought to produce substantial results.

Shakespeare's Julius Cæsar. By L. W. Lyde. 112 pp. (A. and C. Black.) 1*s.*—Previous volumes of this series have taught us to expect completeness and condensation in these editions, and the present volume does not fall short in these respects. Mr. Lyde's introductory matter is well arranged, and he must have a sort of talent for sub-division, for he manages to break it up into no less than ten sections, all very easily mastered, and almost unexceptionable; though (the writer has not his books at hand), is the title of Weever's play correctly given on p. xix? The notes are serviceable, but not by any means remarkable.

Shakespeare's Julius Cæsar. By J. Lees. 138 pp. (Allman.) 1*s.*—There is throughout this volume an appearance of smartness in type and general get-up which redeems it, independently of its average merits as an edition, from the reproach of being merely one more attempt to make Shakespeare a good school-subject. Mr. Lees makes every attempt, both in his introduction and notes, to show that he has gone to work with great care, and has collected much erudite matter connected with Julius Cæsar. This he puts in a form which is educationally serviceable perhaps, though references to both Schlegel and Gervinus are rather unconvincing at this time of day. The notes are really good throughout. Eminently an edition by a schoolmaster for schoolmasterly uses.

Macaulay's Essay on Addison. By Arthur Burrell. 151 pp. (Longmans.) 1*s.* 6*d.*—More of the omnipresent Macaulay; and the editor of this volume has an evident and sincere conviction of Macaulay's transcendent usefulness for school work, for he announces his edition, "With a general introduction to the study of Macaulay and an essay on literary characteristics," with quite a magniloquent flourish. He goes on to say that "Macaulay's work deserves most careful study, not only because he has been admitted by common consent to the company of great writers, and has thus become a classic, but also because he was a great historian, a famous Englishman and a good man." Well, well! So were Lord Clarendon and John Gilpin and the late Mr. Spurgeon. There is much, however, that is commendable in this volume, particularly the notes, and especially the very interesting and numerous illustrations.

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History

Modern Europe, 1815-1899. By W. A. Phillips. (Rivington's Periods of European History.) xii. + 575 pp. 6*s*. net.—This series is now complete, and, as we anticipated in the August, 1901, number of THE SCHOOL WORLD, our readers have a continuous story of Europe from 476 to the present time. We have read Mr. Phillips' volume with much pleasure. It is well and pleasantly written, and the tangle of European politics in the nineteenth century is cleared as much as is in the nature of things possible. It is natural to compare it with Fyffe's volumes, almost the only short manual of the period hitherto available. It is not so detailed as its predecessor, and the student of the period would do well to use both to supplement one another. But it is clearer and more up-to-date as regards information. The publication of Martens' collection of Russian treaties and of Bismarck's memoirs has inevitably required a new setting of certain stories. Mr. Phillips is also less English-centred than Fyffe, and in fact, pressed by conditions of space, he almost entirely omits English history except as it forms part of the whole. This is well, for we can get the domestic history of our own times abundantly told in other works, and it is all important that we should be forced out of our insularity, specially on the great questions of our own day, the relationships between Great Britain and Russia. This Mr. Phillips helps us to be. We have noted several small inaccuracies, due almost entirely to the printer or the proof-reader. These can be removed in a new edition.

A Short History of the Hebrews to the Roman Period. By R. L. Ottley. 324 pp. (Cambridge University Press.) 5*s*.—A really serviceable and trustworthy history of the Hebrew people, as distinguished from the numerous compendiums of Old Testament history which exist, has long been required; and it seems hardly too much to assert, after a careful examination, that Mr. Ottley has supplied it. The compass of this volume is modest, but the information it contains is complete, clear, and scholarly in style, and trustworthy in view. Mr. Ottley has managed to avoid any sort of partisanship with sections inside the Church, or among extreme crictics outside of it. In a word, the book is as healthy and sane as it is attractive and readable. To the ordinary reader the whole of this volume can be unreservedly commended for the purpose of obtaining a just and moderate view of the stirring and chequered history of a nation which in spite of churches and creeds is really very little known to the majority of people. As an instance of the care and lucidity of the author, the geographical account of Palestine as bearing on its early history (p. 90 *et. seq.*) is valuable; so also is the light thrown upon those Philistines whom everybody knows by vague name and repute. Mr. Ottley perhaps hardly makes enough of the fact that the function of the prophets, for the most part, was that of an organised spiritual opposition to the government of the day; and one thinks that his selection of the English period between Henry II. and Elizabeth as supplying some sort of parallel to the development of Israel between Saul and Solomon will hardly hold. A period of seventy-five years of magical increase in wealth, prosperity and the arts of life, is much more easily matched in Victorian England, or even in the period between the birth of industrialism in the middle of the eighteenth century and the Lancashire cotton famine of the sixties of the nineteenth. The maps and appendices to this volume are beyond praise: an excursus makes the course of the history easy to follow; but if a suggestion may be set against these merits, the hieroglyphic references (H.G.H.L., O.T.J.C., &c.) to works quoted would be much better explained at the beginning than at the end of the work. The book is admirable; how admirable, perhaps, can best be known to any fairly equipped student who turns to Mr. Ottley's discussion of the eighth century, B.C., for an example of accurate and philosophical dissection of the most momentous period in Hebrew history.

Roman Public Life. By A. H. G. Greenidge, M.A. 483 pp. (Macmillan's Handbooks of Archæology and Antiquities.) 10*s*. 6*d*.—It is hardly possible to speak too highly of this able work. Mr. Greenidge has portrayed not only the Roman Constitution at all stages, but the lines of its development, and has traced the origin of each feature with great skill. The arrangement is convenient, and to test the conclusions easy; for he not only refers to his authorities, but cites the words of all significant passages. A remarkable picture is drawn here of Roman family life, and the reader can well understand how a nation which could evolve an ideal so noble of discipline and dignity came to rule the world. Chapters follow on the Monarchy, the Servian Constitution, the Republic, the Magistracy in general and in particular, the People and the Senate, the Provinces, the Principate, and the Provinces under that rule. The study of this wonderful political machine cannot fail to be useful to the practical man as well as to the scholar. A bibliography is prefixed, but there is no book in it which can take the place of this.

A Short History of the English Colonies. By A. F. Dodd. 222 pp. (Dent.)—We can heartily recommend this book to our readers. It is a short account, but full of matter, interesting and instructive. After two introductory chapters on "colonisation" in general, and the age of Elizabeth in particular, the various colonies of England and Great Britain are treated under a geographical grouping. There are several maps, and other illustrations. The form of the book is excellently adapted to carry in the pocket, and it would be a useful companion to the ordinary citizen who wishes to add some intelligent knowledge to his zeal for the Empire.

Alfred the Great, his Life and Times. By Geo. F. Bosworth. xvi. + 200 pp. (Macmillan.) 1*s*. 6*d*. *Alfred, the Model of English Kings.* By P. Gibbs. 41 pp. (Cassell.) 2*d*.—The number of books about Alfred in this his millenary year continues to increase. They have all a marvellous family likeness, and, if time served, it would be interesting to count the sentences common to all of them. Of the two whose titles are here given, the latter is a reprint from a book by the author called "Founders of the Empire," which contain ten other parts. It is slight but correct and the pictures are fairly good. The other is larger, is *inclusive* of stories, and contains some really good illustrations, besides a bibliography. But they both talk about "liberty and freedom." We wonder what this phrase can possibly mean!

English History Illustrated from Original Sources, 1307-1399. By N. L. Frazer. xvi. + 128 pp. (A. & C. Black.)—This is the first part to be published of what is intended to be a complete history of England told by contemporary writers. Mr. G. T. Warner, the editor of the Series, thinks that thus and thus only should history be taught in schools. We have our doubts as to the general principle, but should be glad to hear of the experiment being tried. At least, we welcome *any* change from the old unintelligent, dry-as-dust, mechanical methods still (alas!) too much in use among us. The experiment will assuredly not fail for want of a good text-book. This volume is excellent. Extracts of all kinds are included, illustrations (maps and otherwise) are abundant. There is a "date summary" which serves as an index, and there is a very full bibliography. We wish the series all success.

A Vanished Arcadia. By R. B. Cunninghame Graham. xvi. + 294 pp. (Heinemann.) This is a book for the teacher's library. It is "some account of the Jesuits in Paraguay, 1607

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1767," and has been written out of the fulness of the writer's heart. Mr. Graham has a fine scorn for his fellow-countrymen and their ideals. He prefers the old-world heroisms to anything that he can find within the "beefy pale of Anglo-Saxondom," and this work is written with the purpose of proving to such materialists as we that there have been men belonging to other faiths than ours whose "failures" are worth more than all our successes. The book has therefore a double value. To those who will "receive it" it will serve as a useful irritant to stir us out of self-complacent satisfactions, and even to those who do not agree with the author's view of his compatriots it will reveal a whole history that is, generally speaking, quite unknown to us. In some dim way we have known that the Society of Jesus, whatever its "crimes" in Europe, was essentially a missionary society, and there was no accessible part of the non-Christian world to which they did not penetrate. We have heard of their doings in India and China, our forefathers came across them in North America, and now Mr. Graham tells the story of their doings in South America with his eye perpetually fixed on South Africa and its present condition. In South America the Spaniards and Portuguese wanted to exploit the Indians and force them to labour under conditions which would speedily have exterminated the race. The Jesuits were determined, on the contrary, to convert the Indians, and save them from slavery. How they succeeded in their enterprise to a large extent, how they were able to play off the King of Spain, the governors and bishops of the colonies one against the other, how they were at last suppressed and how their enemies attempted, in vain, to continue their regulations for the Indians, is all told with much detail and with more enthusiasm in this volume. There is a map and an index, and we refrain from saying more because we wish to let curiosity goad our readers into buying, reading, marking and learning for themselves.

Mathematics.

First Year's Algebra. viii. + 172 pp. *Elementary Algebra.* xvi. + 448 pp. By C. N. French, M.A., and G. Osborn, M.A. (Churchill.) 1*s.* 6*d.*, 4*s.* 6*d.*—We are glad that a second edition of the "Elementary Algebra" has been called for so soon; the work has now been extended so as to cover the London Matriculation syllabus. The "First Year's Algebra" is a separate issue of chaps. i.-xv. of the larger book.

Primer of Geometry. By H. W. Croome Smith, B.A. xvi. + 100 pp. (Macmillan.) 2*s.*—This is not without its good points, but for several reasons is not suited for class purposes. Mr. Smith is occasionally obscure, if not illogical ("A whole is divided into parts, when the whole is the sum of its parts, and consequently greater than any one of these"); his grammar is not always correct ("A rhombus, and therefore a square, are equilateral"); his periodic style is hardly suitable to the subject, and certainly inappropriate in a junior text-book; and it is, we think, a mistake to combine Euclid II., 12, 13, in one demonstration. On the other hand, the sequence of propositions is novel and in many ways attractive, though here again it may be observed that the treatment of parallels at the very outset is rather likely to discourage a beginner, whatever may be said in favour of its logical propriety. The book is, however, a conscientious piece of work, and teachers may gain some useful ideas by reading it.

The Story of our Weights and Measures. By E. Nicholson, F.I.C., F.C.S. iv. + 48 pp. (Liverpool: Donald Fraser.) 3*d.*—More amusing than instructive. For example:—"It is most probable that the English foot was derived from the English talent of 1,000 ounces. Many centuries ago some clever men, following the example of Eastern nations, arranged our measures to be concordant with the weights we had derived through the Romans from ancient Egypt. A cubic vessel holding as nearly as possible 1,000 ounces of water—two-thirds of the weight of the Alexandrian-Roman talent—was measured inside, and the length of one side was taken for the foot. Thus our foot is in all probability derived from the English talent of 1,000 ounces of water equivalent to a cubic foot."

Elementary Geometry, Plane and Solid. By T. F. Holgate. xii. + 440 pp. (Macmillan.) 6*s.*—A very attractive book of the "reforming" type, distinguished by its freshness and individuality. From the outset the student is required to use his thinking powers; proofs of the propositions being frequently given in outline only, for the pupil to fill up. At the end of each chapter is given a very useful summary of its contents. Proportion is treated by the method of unity, passing from the commensurable to the incommensurable case. There is an appendix on elementary trigonometry, and a table of mensuration formulæ. The final verdict on a text-book like this cannot be given until it has been practically tested with a class; but there seems to be every reason to believe that, in the hands of a capable teacher, Professor Holgate's treatise will prove to be very effective and stimulating. The author's suggestions to teachers in his preface are eminently reasonable; especially his remark that "in this subject the primary object should be the acquisition of geometric knowledge and the development of the geometric sense. Logical reasoning and rhetorical demonstration are secondary aims, to be sure, but the first object should be geometry."

LONDON MATRICULATION, JANUARY, 1902.

Revision Test Papers.

Latin Grammar and Composition.

(1) Give the gender and, if found, the accusative singular and genitive plural of:—vis, amor, mus, papilio, lac, ilex, incus, jecur, poema, domus.

(2) Give the imperative second person singular and the perfect subjunctive first person singular active and the supine of the following verbs:—Compounded with *ad:* cado, caedo, fero, gradior, facio; and with *cum*—operio, tango, lino, ago, quaero.

(3) Give the present infinitive passive and the future-perfect active third person plural (if found) of the following participles:—sanctus, pensus, punctus, repertus, notus, miscens lavans, illiciens, frangens, alens.

(4) In what points do the following verbs differ from the types of their respective conjugations:—duco, do, fero, sono, prandeo.

(5) Give the meanings of the following words, with two examples of the construction of each:—instar, O, vae, pro, apud, sub, utinam, secundum.

(6) Give the other degrees of comparison of:—falsus, propinquus, proximus, diutius, pejus, prudentissime, potior.

(7) Explain, giving illustrations, what is meant by—Cognate accusative, Gerundival attraction, Epistolary imperfect, Historic infinitive.

(8) Give a rule for the use of the moods in clauses introduced by *etsi*, and explain the use of the mood following *dum* in—

(*a*) Multa bello passus, dum conderet urbem.

(*b*) Tityre, dum redeo, pasce capellas.

(*c*) Iratis tempus dandum est, dum se ipsi colligant.

(9) Translate into Latin:—

(*a*) Honour thy father and thy mother that thy days may be long upon the land which the Lord thy God giveth thee.

(*b*) So tarries for a moment the life of man in our sight, but what is before it or what after it we know not. If this new teaching can teach us aught certainly of these, let us follow it.

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(*c*) The more promptly to withstand the mischief, the Senate decreed that the Consuls should hold a levy.
(*d*) What can happen to anybody can happen to everybody.
(*e*) Ariovistus, having learnt the demands of Cæsar, answered that Gaul was his province. Why did the Romans invade their territory without assigning cause?

English Language and Literature.

I.—LANGUAGE.

Not more than seven *questions to be attempted.*

(1) "The American and the Englishman can still for the most part understand one another, but if it were possible to bring together the subjects of King Alfred and King Edward, they would be mutually unintelligible." Explain this statement.
(2) Give an account of the Latin periods in English.
(3) Classify the consonantal sounds in English. Comment on the spelling of the following words:—*doubt*, *tender*, *island*, *analyze*, *phantasy*.
(4) Discuss the use of the term *case* as applied to English nouns. What is the origin of the use of *'s*?
(5) Explain the use of the pronouns in these sentences:—
Put up thy sword into *his* place.
Ye have not chosen me, but I have chosen *you*.
I know *who* you are.
This is the man *who* did it.
What he wants I cannot imagine.
Henry, *who* came yesterday, was late.
The man *who* came yesterday was late.

(6) Account clearly for the present and past forms of the chief auxiliary verbs. Explain the modern use of *shall* and *will*.
(7) Parse the words in italics in the following:—
When did you come? I know *when* you came. You came *after* I left. *As* the tree falls, *so* will it lie. They are not *so* clever *as* you think. We ran *like* the wind.
(8) Why are prepositions so called? Discuss the use of *past* in, "He went past the house"; of *of* in "The island of Great Britain"; of *by* in "Do your duty by the University."
(9) What is the difference in meaning between *anxious* and *desirous*, *illusion* and *delusion*, *liberty* and *freedom*, *discover* and *invent*, *vocation* and *avocation*? Give examples of words that have undergone changes of meaning during the last three centuries.
(10) Analyse:

Or go to Rome, which is the sepulchre,
Oh, not of him, but of our joy: 'tis nought
That ages, empires, and religions, there
Lie buried in the ravage they have wrought;
For such as he can lend,—they borrow not
Glory from those who made the world their prey.

II.—LITERATURE AND COMPOSITION.

Not more than three *questions to be attempted.*

(1) "Hence letter-writing becomes a test of the skill already acquired in other fields of literary exercise." Explain this statement.
What do you know of Lord Chesterfield's "Letters?"
(2) Who were the writers of: Virginibus Puerisque, Euphues, Endymion, The Antiquary, The Vicar of Wakefield, Comedy of Errors, Morte D'Arthur? Briefly describe *one* of these works.
(3) Give an account of the structure and rhythm of a sonnet. Point out some features of merit in any sonnet that you have learnt.
(4) What do you know of any *two* of the following writers:—Chaucer, Bacon, Milton, Wordsworth, Tennyson?
(5) Where are the following quotations to be found?
(*a*) Slow rises worth by poverty depressed.
(*b*) There is some soul of goodness in things evil.
(*c*) God made the country and Man made the town.
(*d*) In that world-earthquake, Waterloo.
(*e*) Our birth is but a sleep and a forgetting.
(*f*) Even I
Regained my freedom with a sigh.

English History and the Geography relating thereto.

(*Not more than* six *questions to be tried, of which one must be Q.* 12.)

(1) Show how and why Wessex succeeded, while other English kingdoms failed, in effecting the political unification of England.
(2) Discuss *any two* of the following statements about King Alfred:—
(*a*) "Alfred the Great was the founder of the British Navy."
(*b*) "Alfred saved us from paganism and barbarism."
(*c*) "It is to Alfred that we owe our glorious national institution of Trial by Jury."
(*d*) "Alfred saved his dynasty: that is the only abiding effect of his reign on English History."
(3) In what way did Ireland come into contact with England prior to the reign of Henry II.?
(4) Explain shortly the general objects and character of the Crusades, and in somewhat greater detail describe what part England played in them.
(5) Write an account of any notable baronial risings in the reign of *either* (*a*) Henry II., *or* (*b*) John, *or* (*c*) Henry III.
(6) Show why the parliament assembled in 1295 has been distinctively called the Model Parliament. Mention any six points in which that assembly was markedly different from the parliament of our own days.
(7) Examine briefly the principal causes and consequences of the Wars of the Roses.
(8) Describe the objects and trace the course of Henry VIII's foreign policy.
(9) Write an account of the relations of *either* Elizabeth, *or* James I., *or* Charles II., with the English Parliament.
(10) Consider briefly the importance of Monk, Monmouth, Montague, and Montrose in English History during the seventeenth century.
(11) Name half-a-dozen battles in English History during your period which you think worthy to be called "decisive." State concisely what important thing each decided.
(12) Draw a map of South Britain showing *either* (*a*) the principal Roman roads, *or* (*b*) the mediæval dioceses, *or* (*c*) the position of about twenty important monasteries, *or* (*d*) the regions held by Royalists and Parliamentarians respectively at the outbreak of the Great Civil War.

Arithmetic and Algebra.

(1) (i.) Simplify $\dfrac{(354 \div \frac{1}{7}) + (4\frac{3}{11} \div 5)}{(17\frac{3}{5} \times \frac{5}{11}) + (17 \times \frac{3}{5})}$.

(ii.) An ash tree requires for its growth twice as many square yards of land as years it has grown. How many trees, five years old, must be planted at the present time that the whole of a field, 18 acres in extent, may be utilised in 40 years' time? and what will be the value of the timber on the land if an ash plant, 5 years old, is worth 1s. 3d. and increases in value 1s. 3d. each subsequent year of its growth?
(2) Equal volumes of water and marble are taken, the volume of water weighing one lb. If 12 cubic feet of marble weigh one ton, a gallon of water weighs 10 lbs., and contains 277·274 cubic inches, find the weight of the marble.
What will be the percentage error if the weight of one cubic foot of water be taken to be 1,000 ozs.?
(3) (i.) Goods are sold for £140 13s. 3d. at a loss of 7 per cent.; find the cost price. What gain per cent. would have been made if the goods had been sold for £163 7s.?
(ii.) How much money must be invested to obtain an income of £840, half the capital being invested in the 2¾ per cent. Consols at 93½ and the other half in 4½ per cent. Railway stock at 135?
(4) Resolve into factors:—(i.) $9 - \frac{1}{3}a^2b^2$; (ii.) $(x+a)^4 - (x-a)^4$.

Simplify (i.) $\left[1 - \dfrac{1 + 4a^4b^4}{1 + 2ab + 2a^2b^2}\right] \div \left[\dfrac{1}{b^2} - \dfrac{2a}{b} + a^2\right]$

(ii.) $\dfrac{(ab + bc + ca)(a + b + c) - 3abc}{ab(a + b) + bc(b + c) + ca(c + a)}$.

(5) A person travels from London to Manchester in 14 hours, partly by cycle and partly by rail. For half the distance he

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cycles at the rate of 9 miles an hour and for the other half he travels at the rate of 45 miles an hour. If two hours be allowed for stoppages and the time he has to wait for the train, what is the distance from London to Manchester?

(6) (i.) Solve the equations $x + y = c$, $ax + by = c^2$.

(ii.) How many different numbers between 800 and 900 are such that if 99 be added to them, the order of the digits is reversed? What are these numbers;

(7) (i.) Find, to two places of decimals, the values of x which will make $x^2 + 3x + 1 = 0$.

(ii.) If x_1, x_2 be the roots of the equation $x^2 + x + 1 = 0$, show that (i.) $x_1 + x_2 = x_1^2 + x_2^2 = x_1^4 + x_2^4 = x_1^8 + x_2^8 = \ldots\ldots$,

(iii.) $(a + bx_1 + cx_2)(a + bx_2 + cx_1) = a^2 + b^2 + c^2 - bc - ca - ab$.

(8) (i) Find an Arithmetical Progression the sum of the first six terms of which is $67\frac{1}{2}$ and of the six following terms, $157\frac{1}{2}$.

(ii.) Show that in an infinite geometric series, the sum of all the terms after the n^{th} is less than the n^{th} term only if the common ratio be less than $\frac{1}{2}$.

Answers.

(1) (i.) $25\frac{4}{5}$; (ii.) 968; £2,480 10s. (2) 2·995 lbs.; ·286%.

(3) (i.) £151 5s.; 8%; (ii.) £26,775; (4) (i.) $3 \cdot 3 \cdot \left(1 - \frac{ab}{3}\right)\left(1 + \frac{ab}{3} + \frac{a^2b^2}{9}\right)$; (ii.) $8ax(x^2 + a^2)$; (i.) $\frac{2ab^3}{1 - ab}$; (ii.) 1.

(5) 180 miles. (6) (i.) $x = \frac{c(b-c)}{b-a}$, $y = \frac{c(a-c)}{a-b}$; (ii.) 10, 809, 819, &c. (7) (i.) $-\cdot 38$ or $-2\cdot 61$.

(8) (i.) 5, $7\frac{1}{2}$, 10, ...

Euclid.

(1) If two triangles have the three sides of the one respectively equal to the three sides of the other, each to each, then they have their corresponding angles equal.

D, E are points taken in the equal sides AB, AC of the isosceles triangle ABC, so that AD is equal to AE: if BE, CD intersect in F, show that BF is equal to FC.

(2) AB is a given straight line, and C, D any two points not on the line: find a point X in AB such that the angles AXC, BXD may be equal.

(3) The complements of the parallelograms about the diagonal of any parallelogram are equal.

ABC is a triangle, right-angled at B; any point P is taken in the hypotenuse AC, and PD, PE are drawn parallel to the sides of the triangle: show that the rectangle PDBE is greatest when P is the middle point of AC.

(4) If a straight line be divided equally and also unequally, the sum of the squares on the unequal parts is equal to twice the sum of the squares on half the line and on the line between the points of section.

Enunciate and prove the general proposition when the point which divides the given line unequally is *not* taken on the given line (or given line produced), but outside it.

(5) If a point be taken within a circle, from which there can be drawn more than two equal straight lines to the circumference, that point is the centre of the circle.

(6) Draw a common tangent to any two circles.

Two circles intersect in AB, and PQ is the direct common tangent nearer to A: show that the angle PAQ is greater, and the angle PBQ less, than a right angle.

(7) If from the point of contact of a tangent a straight line be drawn cutting the circle, the angles which this line makes with the tangent are equal to the angles in the alternate segments of the circle.

ABC is a triangle inscribed in a circle, and on AB (produced, if necessary) a point D is taken so that AD equals AC, and a similar point E is found in AC, so that AE equals AB: show that DE is parallel to the tangent at A.

(8) Inscribe a regular pentagon in a circle.

The triangle ABC has each of the angles at B and C dobule of the angle at A, and BD is drawn at right angles to AB, meeting AC produced in D: show that, if E be the middle point of AC, the rectangle contained by DC and DE is equal to the square on CE.

General Elementary Science.

CHEMICAL QUESTIONS.

(1) Describe as fully as you can what happens when sulphur is burnt in air. What experiments would you perform to demonstrate the properties of the gas formed as the burning continues? How can the product of combustion be converted into sulphuric acid?

(2) How is it that chemically pure water is never found in nature? State the chief substances present in river water, taking as an example the water of the Thames at Richmond. Where do these substances come from? How could you obtain chemically pure water from river water?

(3) What happens when sulphuretted hydrogen is passed through a solution of copper sulphate? Account as well as you can for what takes place. Compare the results obtained in this case with those which follow when the same gas is passed into a solution of caustic soda.

PHYSICAL QUESTIONS.

(1) Being provided with a piece of thermometer tubing closed at one end, into which a short thread of mercury has been introduced, explain how, if you know the height of the barometer at the time and place of the experiment, you could with this simple apparatus prove Boyle's law.

(2) It is found by measurement that the length and breadth of a rectangular sheet of brass are l cms. and b cms. respectively. By weighing, the mass of the sheet is found to be m grms. Knowing that the relative density of brass is 8, how would you proceed to calculate the thickness of the sheet?

(3) You are provided with a sheet of metal of irregular shape and a table with a straight edge. Explain in detail how you would, without any other apparatus, find the centre of gravity of the metal plate. How could you, by a second method in which other appliances may be used, verify your result?

(4) I place on a piece of wood a vessel containing ether, having previously poured some water on the wood. State what occurs when I blow over the surface of the ether with a pair of bellows, and explain the several results.

(5) Explain the term "index of refraction." You are provided with a slab of glass from a box of weights, some pins, and a sheet of white paper. Explain how you would proceed to determine the index of refraction of the glass.

(6) Many houses are now supplied with electric bells. What kind of Voltaic cell is generally used in connection with the bell? Describe its construction and give an account of the chemical changes that go on in the cell when a current is passing.

(7) Describe the construction and use of, either (*a*) a pin-hole camera, or (*b*) a lactometer.

French.

I. Translate into English:—

(1) Il est six heures du soir; la neige tombe et les flocons blancs sont emportés par les rafales dans une course folle autour de la cour de la caserne. La chambrée est noire, froide, piquée çà et là de petits points rouges—le feu des cigares et des pipes fumés dans l'obscurité. Les soldats ont fini de manger la soupe; ils se sont étendus ou assis sur leur lit, et attendent silencieusement l'arrivée des deux hommes de corvée qui doivent apporter le charbon. Ils ne se voient pas et n'éprouvent point le besoin de causer; ils ont froid et leurs membres sont gelés comme leurs idées. Tout à l'heure il fera chaud, il fera presque clair, car on allumera la chandelle fumeuse, toujours plantée dans son goulot de bouteille, et on causera. Car il n'y a rien de si gai qu'une veillée militaire. De tous les plaisirs qu'un troupier peut goûter dans le courant d'une année, c'est bien certainement le meilleur, le plus sain, celui que rappelle le mieux la vie de famille.—J. Drault.

(2) Nous éprouvous quelque honte pour le ciel italien, qu'on se figure à Paris d'un bleu inaltérable, à dire qu'à notre départ de Vérone de grands nuages noirs encombraient l'horizon; il est fâcheux de commencer un voyage au pays du soleil par des descriptions d'orage, mais la vérité nous oblige à confesser que la pluie tombait en larges tranches d'abord sur les lointains, ensuite sur les plans les plus rapprochés de la contrée à travers laquelle le chemin de fer nous emportait. Des montagnes couronnées de nuages, des collines égayées de

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châteaux et de maisons de plaisance formaient le fond du tableau. Les devants se composaient de cultures très vertes, très variées et très pittoresques. La vigne en Italie ne se plante pas comme en France ; on la fait monter et grimper en treilles. —Théophile Gautier,

II. Translate into French :—

It is one thing to own a library: it is quite another to use it wisely. I have often been astonished how little care people devote to the selection of what they read. Books, we know, are almost innumerable ; our hours for reading are very few. And yet many people read almost by hazard. They will take any book they chance to find in a room at a friend's house ; they will buy a novel at a railway station if it has an attractive title ; indeed, I believe in some cases even the binding affects their choice. The selection is no doubt far from easy. I have often wished some one would recommend a list of a hundred good books. If we had such lists drawn up by a few good guides they would be most useful.—Avebury.

III. Grammar.

(1) Give the four ways in which adjectives and nouns ending in *eur* may form their feminine. Note any exceptions to these four rules.

(2) Distinguish between :—*poignée* and *poignet ; cousin* and *coussin ; fosse* and *fossé ; a verger* and *un verger ; a library* and *une librairie.*

(3) Give the past definite (preterite) and present subjunctive in full of *prévaloir, pourvoir* and *moudre ;* and the present indicative in full of *redire, contredire* and *maudire.*

(4) Give the rules for the agreement of the past participle (*a*) with impersonal verbs, (*b*) with reflexive verbs. Give two examples of each rule and translate them into English.

(5) Give the French for :—January 13th, 1902 ; a score of bullets ; it is freezing hard ; go away ; many others think so ; your life is at stake ; no sooner said than done ; on an average ; your watch is ten minutes slow ; for want of something better.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Historical Stories dealing with English History, 1066-1399.

WILL you be good enough to publish a list of good historical stories covering the 1066-1399 period of English History for the Oxford Local Examinations, July, 1902. One feels the need of such stories to help the class work which may then become more thorough.

EVAN BISS.

Witney, Oxon.

The following seem to be generally esteemed :—

WILLIAM I.—* † Lytton, "Harold" ; * Kingsley, "Hereward" ; † Macfarlane, "Camp of Refuge" ; Crake, "Third Chronicle of Acscendun" ; Blake, "Siege of Norwich Castle." [Tennyson, "Harold" (play.)]

WILLIAM II.—Anon., "Rufus the Red King" ; Scott, "Count Robert of Paris" (Constantinople : First Crusade).

HENRY I.—Baring-Gould, "Pabo the Priest." [Rossetti, "The White Ship" (poem.)]

STEPHEN.—Crake, "Brian Fitz-Count" ; † Macfarlane, "Legend of Reading Abbey" ; * Crawford, "Via Crucis" (Second Crusade).

HENRY II.—Scott, "The Betrothed" ; "Maturin, "Eva" (Ireland). [Tennyson, "Becket" (play.)]

RICHARD I.—* Hewlett, "Richard Yea-and-Nay" (Third Crusade) ; * Scott, "The Talisman" (Third Crusade) ; * Scott, "Ivanhoe" (Robin Hood).

JOHN.—G. P. R. James, "Philip Augustus" ; Yonge, "The Constable's Tower" ; * Edgar, "Runnymede and Lincoln Fair." [Shakespeare, "King John" (play.)]

HENRY III. — Crake, "House of Walderne" ; Edgar, "How I won my Spurs" (both dealing with the Barons' War) ; * Leighton, "Thirsty Sword" (Norse Invasion of Scotland, 1264-5).

EDWARD I.—Yonge, "The Prince and the Page" ; Peard, "Prentice Hugh" ; E. E. Green, "The Lord of Dynevor" (Wales) ; * Jane Porter, "The Scottish Chiefs" ; Henty, "In Freedom's Cause" (Wallace and Bruce).

EDWARD II.—* Aguilar, "The Days of Bruce" ; Scott, "Castle Dangerous." [Scott, "Lord of the Isles (Bruce : poems.)] Rhys, "The Whistling Maid" (Wales) ; E. S. Holt, "In Convent Walls" (Despencers).

EDWARD III.—* Conan Doyle, "The White Company" (Black Prince) ; E. E. Green, "In the days of Chivalry" (Black Prince) ; Yonge, "The Lances of Lynwood" (Black Prince in Spain) ; Henty, "St. George for England" (Cressy and Poitiers) ; Mitchell, "The Golden Horseshoes" (Chivalry) ; Edgar, "Cressy and Poitiers." [Lytton, "Rienzi" (Rome, 1340-1354.)]

RICHARD II.—* E. Gilliat, "John Standish" ; Minto, "Mediation of Ralph Hardelot" ; Ainsworth, "Merrie England" ; Henty, "March on London" ; M. Bramston, "Banner of St. George" ; A. N. Meyer, "Robert Annys, Poor Priest" (all about the Peasants' Rising). [Shakespeare, "Richard II." (play.)]

This list includes all those contained in the *select* lists compiled by E. B. Sargant and B. Whishaw ("Guide to Books," Frowde, 1891), by Miss Andrews ("Work and Play in Girls' Schools," Longmans, 1898), and by J. Nield (*Literary World*, 26th April, 1901). One or two (mostly recent books) are added from personal knowledge. A fuller list, compiled in 1882, is contained in Mr. H. C. Bowen's "Descriptive Catalogue of Historical Novels and Tales." There are also many "good historical stories" which are not fiction, *e.g.*, Froissart.

Determination of Surface Area of a Sphere.

In your issue of November I notice a letter which commences : "The first great difficulty which confronts the teacher of practical physics when conducting his pupils through the early stages of the subject is perhaps the experimental verification of the formula for the superficial area of a sphere."

May I suggest the following experiment, with apologies if it is not new ? Measure the diameter of an ordinary lawn-tennis ball. Take off the flannel covering, cutting it along the seams ; two elongated figure-of-eight pieces are thus obtained. Flatten these out on drawing paper, draw the outline in pencil, and by means of a T-square and set square divide into square centimetres. The results are remarkably accurate, and the method has the advantage of being a direct one.

I should like to take this opportunity of saying that I think it a disadvantage to estimate any superficial area by the method of weighing, at least with young pupils. Those who are older can distinguish between weighing a surface and weighing something to represent a surface ; but if the latter is adopted with beginners, it will take two or three years to get them out of the idea that a surface is something that can be weighed, and the following expression will often be found in their note-books :—*n square* centimetres of wood, iron, &c., weigh *y* grams.

CHARLES M. STUART.

St. Dunstan's College, Catford.

* Specially good. † Edited by G. L. Gomme in Messrs. Constable's Series. (Each 3s. 6d.)

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Abbreviated Arithmetic.

From the articles which have appeared from time to time in The School World, it is evident that abbreviated arithmetical methods are becoming more generally used in the schools; the teachers find that boys not only grasp and readily adopt such methods, but also that their educational value is far greater than that of the rules ordinarily adopted.

It is unnecessary to consider the unfortunate few who are not obliged to earn their own living, or even those who intend to become teachers, but rather to give one's attention to the great majority who, when school days are over, will have to turn their attention to some trade or profession. Those who are concerned with boys of this class have a great responsibility, especially if they succeed, as is too often the case, in giving so great a dislike for arithmetic that only under compulsion can such a boy be induced to look into a book on the subject in after life.

Of the boys who have left school and are now engaged in business or professional life, a small proportion are to be found in the science classes of the various evening schools, and the teachers of such classes are frequently surprised at the comparatively small amount of information relating to arithmetical processes that has really become a part of their mental machinery. These young men have had ample opportunities to *forget* what little they were supposed to know, and full advantage has been taken of the facilities. Such a state of affairs calls for more than mere passing attention. Surely the ability to compute accurately and quickly (since it enters into nearly all the concerns of life, and is to the professional man or skilled artizan an every-day necessity) is one of the most valuable acquisitions that a person can possess.

The explanation of the observed deficiency is, however, not far to seek. When a boy leaves school there are so many demands on his time and attention that little leisure is left to renew acquaintance with the isolated, and in many cases useless, rules into which a school course in arithmetic is divided. That the rules are useless is evident from the fact that the few who remember them are the teachers whose daily use of them prevents forgetfulness.

We open at random a well-known book on arithmetic and find as an illustrative example: "To find the cost of 80 articles at 3s. 11¾d. each." We are told to proceed as follows:—80 × 3 gives 240s. Then, 9d. being ¼ of 3s., we take ¼ of 240s., or 60s.; 2d. being ⅛ of 1s., we take ⅛ of 80s.; and lastly, ¾d. being $\frac{1}{12}$ of 9d., we take $\frac{1}{12}$ of 60s. By adding all these answers together we obtain the total cost of 80 articles at 3s. 11¾d. each to be 318s. 4d. We turn to the end of the book and are happy if the result we have obtained agrees with the answer given. But, the question naturally occurs, would any business man ever use such a roundabout method? Would it not at once suggest itself that the cost is simply 80 × 4s., less 80 farthings or 20d.? Other examples will readily occur to those who are familiar with the methods in vogue.

In justice to some of the modern text-books, it should be pointed out, however, that such valuable aids as contracted methods (when decimals are concerned) are explained. But much more than this is wanted. There seems to be no reason why boys should not be made acquainted with logarithms, which, among other devices, would save the drudgery involved in the extraction of cube roots. Then, too, the binomial theorem as applied to the expansion of simple expressions and other labour-saving methods may be introduced as far as possible. Also, why not let algebra and arithmetic proceed simultaneously? When this is done, problems which present many difficulties when their solution is confined to arithmetical processes are easily solved by algebraical methods. It is certainly time school theory was seasoned with a little of the practice of the workshop and counting house. Frank Castle.

Corps for Small Secondary Schools.

Some time ago the Committee of the Headmasters' Association passed a resolution, "That in all secondary schools for boys where there is no cadet corps, it is important that the curriculum should include instruction in the use of the rifle."

I do not know whether anything has been done towards promoting so desirable a scheme, but in any case it seems unlikely that the recommendations of the Committee would be of much service to country schools, where the numbers are not large, since the instruction seems to be intended for boys of over 15 years of age, at which age their school life is almost at an end for the majority, and the question of cost would probably prevent any large scheme being adopted in schools of this class.

May I venture, then, to bring to the notice of headmasters of country schools an organisation which aims at bringing into closer contact the youth of the Empire—the direction into proper channels of that feeling of patriotism which recent events have aroused, and the encouragement of a systematic attempt to render our public schoolboys ready to take their place in the defence of the Empire at home or abroad.

I allude to the League of the Children of the Empire, which has been started under the presidency of the Earl of Meath. The plan advocated by the League is to enrol the members of each school above the age of 12 into a "chapter" under the guidance of the headmaster, with its officers drawn from the elder boys, and to encourage shooting by some form of "tube" range and by initiating shooting competitions among picked teams of the various schools.

The Blanchett tube, which has been adopted in my own school, seems well fitted for its purpose, and as the rifle is fixed inside the tube, there is no danger in using it, even inside the four walls of the schoolroom. The League aims also to instruct the boys in the history of the various colonies, their natural features, and the prospects they hold out for settlers, by illustrated lectures, and to teach such arts as riding, farriery, carpentry, which would be of practical use in the colonies.

Any headmaster wishful to learn more of the aims and objects of the League should communicate with the Hon. Sec., Mrs. R. Trimen, 19, Emperor's Gate, London, S.W.

W. Watson.

Kingsbridge,
South Devon.

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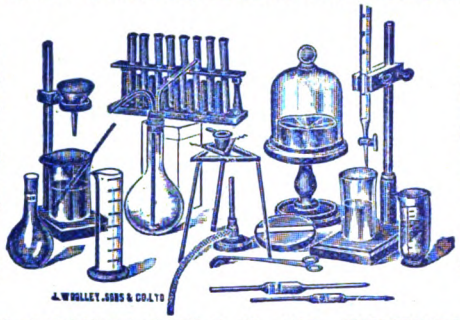

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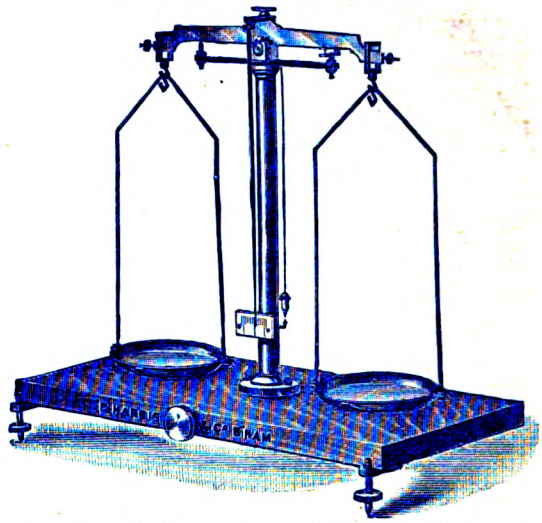

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